







*THE*  
*AGRICULTURAL ADVISORY DEPARTMENT*  
*IMPERIAL COLLEGE OF TROPICAL AGRICULTURE.*



**REPORT**

OF THE

**Agricultural Department**

**ANTIGUA**

**1938.**

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ISSUED BY

THE COMMISSIONER OF AGRICULTURE.

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**1939.**





# REPORT ON THE AGRICULTURAL DEPARTMENT, ANTIGUA, FOR THE YEAR 1938.

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# Report on the Agricultural Department, Antigua

**For the Period January to December, 1938.**

## PART I.

### SECTION 1. GENERAL AGRICULTURE.

#### Weather Conditions.

The average rainfall for 1938 amounted to 44.75 inches. In most districts the distribution was very unsatisfactory: a very low rainfall was registered during the first five and a half months of the year followed by abnormally heavy rains at the end of June and by a dry spell again in September—a month when good rains are of great importance for the cane crop.

#### Chief Crops.

*A. Sugar.* The average rainfall during 1937 was 47.28 inches, a figure 3.61 inches higher than the mean annual rainfall based on a sixty-four year period, and despite unsatisfactory distribution, the 1938 crop was estimated at about 25,000 tons at the end of 1937. As a result of the drought lasting from January to June, 1938, actual production fell considerably below the estimate and amounted to 21,993 tons grey crystals and 232 tons muscovado.

The average yield of cane per acre was 16.2 tons compared with 25.1 tons in 1937, 16.3 tons in 1936, 15.0 tons in 1935, 15.2 tons in 1934 and 20.1 tons in 1933.

1938 was the first crop year under the International Agreement for the restriction of sugar production. The quota assigned to Antigua was 25,000 tons, so that, despite the fact that 600 tons of sugar from the 1937 crop which was shipped in September 1937 counted against the 1938 quota, a considerable surrender was made.

Despite the Quota agreement the price of sugar was lower in 1938 than in 1937, the average price received for the 20,683 tons grey crystals exported being only £9. 6. 9.

The Moth Borer (*Diatraea saccharalis*), while still the major pest of sugar cane, has to a great measure been controlled by the annual breeding and liberation of the parasite *Lixophaga diatraea*, and there appears to be no doubt but that the very low figure for tons cane per ton of sugar at the Antigua Sugar Factory in recent years (7.05 in 1938) has been largely due to the increase in purity of the juices resulting from the reduction of borer damage.

Mr. H. E. Box who has been responsible for the work in connection with the investigation and control of *Diatraea* left Antigua during 1938, his contract having terminated.

The White Grub (*Lachnosterna Antignae*) which has been recognised as a pest of sugar cane for many years past was particularly active during the 1938 planting season, seriously affecting germination over a comparatively large area.

As has been recorded in recent reports, damage from root disease has been less pronounced since greater care has been taken in the allocation of varieties to soil and climatic conditions. The practice of cambering beds on heavy clay soils is on the increase and the resulting improvement in drainage is also a factor in reduction of root disease.

Leaf symptoms of gumming disease continue to be noticeable on all fields of Ba. 11569 which nevertheless gives good yields of cane and juice of satisfactory quality. This variety which is the nearest approach to a general purposes cane for Antigua conditions, is the most widely planted variety and is likely to remain so unless B. 3127 or B. 3439, new Barbados seedlings introduced in 1936, prove its superior.



Three of the railway extensions, the construction of which is being financed by loans granted from the Colonial Development Fund, were completed in time for use during the 1938 crop and work was started on one other line.

Rather more than 25% of the canes milled in 1938 were the produce of peasant growers.

At the end of 1938 the 1939 crop was estimated at about 24,000 tons while the export quota allotted to Antigua for 1939 was 22,750 tons—a figure which should be adequate to cover the quantity of sugar likely to be exported beyond the Colony.

#### **Cotton.**

The 1938 Cotton crop was reaped from about 1,600 acres (including 300 acres in Barbuda). The total production was 175,002 lb. lint (166,727 lb. clean lint and 8,275 lb. stains), an average return of 109 lb. lint per acre. Seventy-six per cent of the crop was, peasant grown.

Prices were rather lower than in 1937: clean lint sold at from 1/3—1/6½ per lb.

Two ginneries—the Antigua Cotton Factory and the Osborne Ginnery—again operated during 1938.

The area planted for the 1939 crop was estimated at 2,000 acres (including 400 acres in Barbuda). The prospects for the crop were good at the end of December 1938. A noteworthy feature was the reduction in the prevalence of pink boll worm following a 3½ month Close Season.

The Cotton caterpillar (*Alabama argillacea*) damaged cotton in some areas, but the use of lead arsenate instead of Paris Green promises more effective control as the former is less readily washed off the leaves of the plants during showery weather.

#### **Food Supply.**

Consideration is now being given to means of increasing local production of food. A beginning was made in 1938 through the taking over by the Peasant Agricultural Development Department of a small locally owned cornmeal factory. A resumé of the information available with respect to food importations and possibilities of local production is contained in Appendix I.

#### **Development of Peasant Agriculture.**

The work of the Peasant Agricultural Development Department established in 1936 has continued to expand. A separate report on the activities of this Department which include encouragement and marketing of peasants' cotton, vegetables, canes and corn and livestock improvement is being published.

#### **Board of Agriculture and Forestry.**

The Board of Agriculture and Forestry constituted during 1937 under the Chairmanship of His Honour the Administrator continued to function. Among other subjects the following matters were discussed: Forestry and Bush Fire Legislation, Praedial Larceny, Administration Charges in connection with peasants renting land on estates for cane cultivation and Increased local production of foodstuffs.

In connection with the question of deforestation and soil erosion, the Administrator as Chairman of the Board, together with the Agricultural Superintendent, visited various districts where clearing of hillsides had assumed serious proportions in recent months and endeavoured to enlist the sympathies of the proprietors with the Board's policy for checking this evil.

#### **Antigua Cotton Growers' Association.**

Peasants' cotton was again purchased at the Antigua Cotton Factory on behalf of the Association, 95,649 lb. seed cotton being bought at 4d. per lb. followed by a further payment of about ⅓d. per lb. on sale of the lint. This bonus absorbed all profits on the transaction.

The Association was represented at the Third General Meeting of the West Indian Sea Island Cotton Association, Inc. held in Trinidad in November by Mr. E. D. Dew.

#### **Agricultural Exports.**

The following Table shows the chief agricultural products exported during the years 1934—1938 inclusive.



AGRICULTURAL EXPORTS 1934—1938.

| Article              | 1934          |            | 1935          |            | 1936          |            | 1937          |            | 1938           |            |
|----------------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|----------------|------------|
|                      | Quantity      | Value<br>£ | Quantity      | Value<br>£ | Quantity      | Value<br>£ | Quantity      | Value<br>£ | Quantity       | Value<br>£ |
| Sugar (Crystals)     | 19,505 tons   | 182,096    | 16,072 tons   | 151,249    | 19,759 tons.. | 180,240    | 31,113 tons   | 315,577    | 20,683 tons    | 193,221    |
| Sugar (Muscovado)    | ....          | ....       | 100 "         | 800        | 100 "         | 1,053      | 314 "         | 3,026      | 160.5 "        | 1,249      |
| Molasses (V. Pan)    | 808,459 gals. | 2,515      | 324,562 gals. | 2,188      | 536,177 gals. | 3,351      | 593,938 gals. | 3,712      | 1,035,640 gals | 10,292     |
| Molasses (Muscovado) | 32,715 "      | 1,968      | 33,802 gals.  | 1,690      | 44,955 "      | 1,980      | 49,976 "      | 2,820      | 18,447 "       | 1,229      |
| Rum                  | 851 "         | 133        | 2,008 "       | 293        | 6,425 "       | 935        | 6,831 "       | 1,080      | 9,449 "        | 4,152      |
| Cotton Lint          | 9,600 lb.     | 480        | 32,950 lb.    | 2,062      | 117,380 lb.   | 8,988      | 96,940 lb.    | 7,131      | 174,842 lb     | 11,910     |
| Lime Juice (raw)     | 3,712 gals.   | 142        | 6,916 gals.   | 305        | 6,106 gals.   | 154        | 1,170 gals.   | 33         | 2,678 gals     | 66         |
| Green Limes          | 97 brls.      | 85         | 77 brls.      | 57         | 94 erts.      | 13         | 577 erts.     | 106        | 155 erts.      | 31         |
| Lime Oil             | 40 gals.      | 395        | 56 gals.      | 448        | 248 gals.     | 1,762      | 36 gals.      | 181        | 748 lb.        | 560        |
| Tamarinds            | 152 brls.     | 93         | 461 brls.     | 295        | 522 brls.     | 522        | 497 brls.     | 506        | 310 brls.      | 279        |
| Tomatoes             | ....          | ....       | ....          | ....       | 147 erts      | 30         | 1,988 erts.   | 292        | 5,493 erts     | 639        |
| Hides and Skins      | ....          | 75         | ....          | 204        | ....          | 232        | ....          | 246        | ....           | 207        |
| Coconuts             | 400           | 2          | 2,300         | 9          | 20,399        | 72         | 34,607        | 99         | 42,961         | 86         |
| Onions               | 10 erts.      | 6          | ....          | ....       | 75 erts.      | 25         | 1,610 lb.     | 14         | 1,800 lb.      | 19         |
| Horses               | 2             | 25         | 8             | 96         | 6             | 80         | 3             | 42         | 9              | 187        |
| Asses                | 6             | 7          | 16            | 64         | 1             | 6          | 5             | 9          | 7              | 13         |
| Mules                | 1             | 12         | 1             | 10         | ....          | ....       | ....          | ....       | ....           | ....       |

## SECTION II. WORK OF THE DEPARTMENT OF AGRICULTURE.

### PLANT IMPORTATIONS

During the year the following plants and seeds were imported:

#### Plants or Cuttings.

Sweet Potato Tubers:

|        |                                                     |
|--------|-----------------------------------------------------|
| B.20—2 | tubers from the Plant Quarantine Station, Trinidad. |
| B.26—2 | " " " " " " "                                       |
| B.29—3 | " " " " " " "                                       |
| B.32—3 | " " " " " " "                                       |
| B.33—3 | " " " " " " "                                       |
| B.44—3 | " " " " " " "                                       |
| B.52—3 | " " " " " " "                                       |
| B.62—2 | " " " " " " "                                       |
| B.64—3 | " " " " " " "                                       |

These potatoes are promising new Barbados seedlings. Germination was good in all cases and multiplication plots have been established to provide material for a varietal trial at the Experiment Station during 1939.

#### Seeds.

|                  |                                                            |
|------------------|------------------------------------------------------------|
| Cotton Seed      | — 150 lb. from Montserrat for use in Multiplication Plots. |
| " " Barbados     | — 3 lb. from Barbados for Varietal Experiment.             |
| " " V 135        | — 3 lb. each from St. Vincent for Varietal Experiment.     |
| " " A.N.         |                                                            |
| " " B.D.         |                                                            |
| " " Nevis        | — 3 lb. from Nevis for Varietal Experiment.                |
| Onion Seed       | — 54 lb. from Teneriffe.                                   |
| Cauliflower Seed |                                                            |
| (Early Patna)    | — 3 lb. from India.                                        |
| Other Vegetable  |                                                            |
| Seeds            | — 22 lb. from U.S.A.                                       |
| Flower Seeds     | — 11 oz. from U.S.A.                                       |

#### PLANT AND SEED DISTRIBUTION.

The following plants and seeds were distributed during the period under review:

#### Cane Cuttings

|             |      |      |      |      |              |
|-------------|------|------|------|------|--------------|
| B.3217      | .... | .... | .... | .... | 15,605       |
| B.3439      | .... | .... | .... | .... | 11,805       |
| B.726       | .... | .... | .... | .... | 11,450       |
| B.3013      | .... | .... | .... | .... | 7,962        |
| F.C. 916    | .... | .... | .... | .... | 7,100        |
| B.H. 10.12  | .... | .... | .... | .... | 5,300        |
| B.3124      | .... | .... | .... | .... | 3,455        |
| B.34104     | .... | .... | .... | .... | 3,195        |
| Ba.11569    | .... | .... | .... | .... | 2,650        |
| B.3138      | .... | .... | .... | .... | 2,200        |
| B.34117     | .... | .... | .... | .... | 1,950        |
| B.34163     | .... | .... | .... | .... | 1,125        |
| B.2935      | .... | .... | .... | .... | 300          |
| P.O.J. 2878 | .... | .... | .... | .... | 300          |
|             |      |      |      |      | <hr/> 74,397 |

|                  |      |      |      |        |
|------------------|------|------|------|--------|
| Tomato Seedlings | .... | .... | .... | 17,200 |
| Onion Seedlings  | .... | .... | .... | 20,800 |
| Pineapple Slips  | .... | .... | .... | 320    |
| Budded Oranges   | .... | .... | .... | 27     |
| " Mandarins      | .... | .... | .... | 3      |
| " Grapefruit     | .... | .... | .... | 9      |
| " Tangerines     | .... | .... | .... | 8      |
| " Mango          | .... | .... | .... | 46     |
| " Avocado Pear   | .... | .... | .... | 14     |
| Bread Fruit      | .... | .... | .... | 124    |
| " Nut            | .... | .... | .... | 39     |
| Sapodilla        | .... | .... | .... | 2      |
| White Cedar      | .... | .... | .... | 9      |
| Eucalyptus       | .... | .... | .... | 139    |
| Flamboyante      | .... | .... | .... | 88     |
| Mahogany         | .... | .... | .... | 87     |



|                          |      |      |      |      |         |
|--------------------------|------|------|------|------|---------|
| White Wood               | .... | .... | .... | .... | 31      |
| Palms                    | .... | .... | .... | .... | 46      |
| Cassia                   | .... | .... | .... | .... | 193     |
| Gliricidia               | .... | .... | .... | .... | 519     |
| Casuarina                | .... | .... | .... | .... | 449     |
| Miscellaneous Ornamental | .... | .... | .... | .... | 147     |
| Onion seed               | .... | .... | .... | .... | 53½ lb. |
| Cauliflower seed         | .... | .... | .... | .... | 2½ lb.  |
| Other Vegetable seeds    | .... | .... | .... | .... | 21 lb.  |
| Flower seeds             | .... | .... | .... | .... | 10 oz.  |

## WORK AT GREENCASTLE EXPERIMENT STATION.

### NURSERY WORK.

#### *A. Sugar Cane.*

The following varieties were grown as Plant Cane:

B.H.10.12, Ba.11569, B.726, B.2935, B.3013, B.3124, B.3125, B.3127, B.3138, B.3439, B.34104, B.34117, B.34163, P.O.J.2878, P.O.J.2883, Co.290, F.C.916, M.42, and M.63.

The following varieties were grown as First Ratoons:

B.H.10.12, Ba.11569, B.374, B.726, B.2935, B.3013, B.3124, B.3127, B.3439, G.119, P.O.J.2878, M.28, M.42, F.C.916 and Co.290 together with specimen plots of B.3922, B.147 (B.4507), B.6308, B.417, M.3, M.7, F.C.988, S.C.12.4, Co.213, Co.221, Co.281, P.O.J.36, P.O.J.213, P.O.J.234, P.O.J.2714, P.O.J.2725, and P.O.J.2727.

The most outstanding of the new varieties under conditions existing at the Experiment Station is the cane B.34104—a cross between B.H.10.12 and Co. 281. Four cuttings of this seedling were obtained from the Plant Quarantine Station in July 1937 and multiplication was sufficiently rapid to provide over 3,000 cuttings for distribution during 1938, as well as sufficient material to plant a nursery plot for use during the 1939 planting season. B.34104 stood the long drought at the beginning of 1938 very well indeed: it is a vigorous grower and appears to ratoon well.

B.34117 germinates well and makes rapid early growth, but its general behaviour at the Experiment Station has been poor. This is a cross between P.O.J.2725 and Co.281.

B.34163 appears to be a cane of some promise: it has not been as easily propagated by stool dissection as has been the case with B.34104 so that the 1938 nursery plot was not as vigorous or as uniform as the nursery plot of the latter, but individual stools have done well. Like B.34104, B.34163 is a cross between B.H.10.12. and Co.281.

#### *B. Fruit and Vegetables.*

*Citrus Fruit.* The following varieties of citrus were propagated:

|                         |      |      |      |      |                 |
|-------------------------|------|------|------|------|-----------------|
| Washington Naval Orange | .... | .... | .... | .... | 143             |
| Parson Brown Orange     | .... | .... | .... | .... | 6               |
| Mandarin                | .... | .... | .... | .... | 32              |
| Tangerine               | .... | .... | .... | .... | 30              |
| Marsh Grapefruit        | .... | .... | .... | .... | 22              |
| Foster Grapefruit       | .... | .... | .... | .... | 15              |
|                         |      |      |      |      | <hr/> 248 <hr/> |

*Mangoes.* The following varieties were propagated:

|        |      |      |      |      |                |
|--------|------|------|------|------|----------------|
| Julie  | .... | .... | .... | .... | 50             |
| Gordon | .... | .... | .... | .... | 10             |
| Ceylon | .... | .... | .... | .... | 5              |
|        |      |      |      |      | <hr/> 65 <hr/> |

*Avocado Pears.* Forty-one plants were propagated, all of the variety Pollock.

*Bread Fruit.* Three hundred and ten plants were raised from root cuttings.

*Bread Nut.* Thirty-nine plants were grown.

*Onions.* 20,800 seedlings were grown for sale.

*Tomatoes.* 17,200 seedlings were raised and distributed on behalf of the Peasant Agricultural Development Department.

*Eddoes, Yams and Sweet Potatoes.* Nursery Plots were grown of the following varieties:

*Eddoes.* Tannia Eddoe, Tannia Yellow, Tannia White, Tannia Roliza, Tannia Priete and Tannia Roliza White.

*Yams.* Seal Top, Bugle Horn, Cush Cush, Light Red, Lisbon and Crop.

*Sweet Potatoes.* V.52, White Gilkes, Three Months and the new seedlings received from the Quarantine Station and listed on page

#### FRUIT PLOTS.

*Citrus.* All citrus plots made good growth during the year but the crop reaped was rather smaller than had been the case during 1937. Exceptionally heavy rains at the end of June caused flooding at a time when most of the orange trees were carrying young fruit which dropped and the later setting of fruit was poor except in the case of the Valencias which fruited heavily.

Under conditions at the Experiment Station this variety, although healthy and a prolific bearer, is definitely inferior in quality to the Washington Navel.

The newer varieties—Sanford Mediterranean, Ruby, St. Michael, Parson Brown, Lue Gin Gong and Lamb's Summer fruited for the first time during 1938. Most of them promise to be of fair quality.

The small plot of Marsh's Seedless Grapefruit fruited well, the fruit being of good quality. This plot which is situated in a hollow near the stream has made excellent progress since the establishment of a windbreak.

*Mangoes.* The mango trees made good growth during 1938 and carried a better crop than had been the case in 1937.

The three varieties grown on the largest scale are the Julie, the Ceylon and the Bombay. The latter which is reputed to be a first class mango with good shipping qualities and well suited to dry conditions has so far proved somewhat disappointing at the Experiment Station, for although the trees have grown well they have not yet fruited, while Julie and Ceylon trees of the same age and size have set good crops.

*Orchard.* The orchard which was started at the end of 1934 made fair progress during the year. Unfortunately the windbreak along the bank of the stream which was beginning to be of service to the citrus at those spots where the main old established windbreak is, was badly damaged in a flood at the end of June, with a consequent check to the growth of the plants it was protecting.

## II EXPERIMENTAL WORK.

For convenience the experiments conducted with sugar cane at the Experiment Station are included in the Section on Sugar Cane Experiments which deals also with field experiments conducted by the Department in various parts of the island.

Experiments in propagation of certain plants whose cuttings are rooted either not at all or only with great difficulty were made with two of the recently recognised plant hormones—B indolyl acetic acid and A (alpha) Naphthalene acetic acid. There appeared to be some stimulation of root formation in cuttings of brick bougainvillea, but unfortunately the flood at the end of June washed most of the cuttings out of the sand bed, and the few remaining plants which showed signs of incipient rooting made no further progress.

## MODEL ALLOTMENT.

The report on the Model Allotment covers the period October 1st, 1937 to September 30th 1938. The total expenditure during this period amounted to £38. 0. 3. and the total revenue to £66. 9. 8., there being a profit of £28. 9. 5.

The total expenditure since the establishment of the allotment amounted to £332. 10. 3½ and the total revenue to £401. 3. 4., leaving a profit to date of £68. 13. 0½.



During the year under review the fruit plot for the first time showed a small profit on the year's working, viz: 3/11. The total deficit on this plot is now £19. 12. 0. so that if this plot be considered apart from the remainder of the allotment the latter now shows a credit balance of £88. 5. 0½.

The statement of revenue and expenditure in connection with the individual crops is shown in Table A.

The profits on canes have been considerably smaller than was the case in 1937, but profits have been obtained this year, not only with potatoes, but also with yams, eddoes, cassava, carrots and tomatoes.

On the whole the conclusions recorded in previous reports have been confirmed, viz., that sugar cane and sweet potatoes are the most profitable crops for the district, although profits may at times be made with provision crops, especially yams and cassava, and with vegetables such as carrots and tomatoes.

As has been stated in previous reports, consideration has been given to the question of making allowance on the one hand for the cost of supervision and of the instalments of the purchase price of the allotment and on the other hand for the fact that the revenue should be credited with a sum equivalent to two days work a week by the holder (1/6 per diem) and with sundry small sums paid for marketing, reaping of vegetables, etc., which would in many cases be done free of cost by members of the allottee's family. As both these figures are estimated at about £8 per annum, they may be disregarded and the statement of revenue and expenditure as presented may be accepted as correct.

TABLE A.

MODEL ALLOTMENT.

TABLE OF CROP EXPENDITURE AND REVENUE.

| Crop           | Plot  | Expendi-<br>ture | Revenue  | Profit  | Loss    |
|----------------|-------|------------------|----------|---------|---------|
|                |       | £ s. d.          | £ s. d.  | £ s. d. | £ s. d. |
| Plant Canes    | 6—10  | 19 1 0           | 16 6 2   |         | 2 14 10 |
| First Ratoons  | 1—5   | 3 19 11          | 11 18 3  | 7 18 4  |         |
| 2nd Ratoons    | 23—27 | 4 2 0            | 10 18 11 | 6 16 11 |         |
| Total Canes    |       | 27 2 11          | 39 3 4   | 12 0 5  |         |
| Sweet Potatoes | 16—20 | 1 17 1           | 6 1 8    | 4 4 7   |         |
|                | 18—22 | 3 19 5           | 10 12 1  | 6 12 8  |         |
| Cassava        | 17    | 6 0              | 13 4     | 7 4     |         |
| Yams           | 17    | 10 1             | 17 3     | 7 2     |         |
| Eddoes         | 17    | 10 4             | 1 7 3    | 16 11   |         |
| Vegetables     | 16    | 3 7 2            | 6 5 9    | 2 18 7  |         |

ANALYSIS OF REVENUE AND EXPENDITURE — VEGETABLES.

|                                                        | Beet    | Carrots | Tomatoes |
|--------------------------------------------------------|---------|---------|----------|
|                                                        | £ s. d. | £ s. d. | £ s. d.  |
| General preparation and care (in-<br>cluding manuring) | 0 7 5   | 0 7 5   | 0 7 5    |
| Planting of seeds or slips                             | 3 4     | 5 0     | 3 2      |
| Watering                                               | 1 9     | 2 0     |          |
| Insect Control                                         | 7 0     |         | 14 2     |
| Reaping and Transport                                  |         | 5 6     | 3 0      |
| Total                                                  | 19 6    | 19 11   | 1 7 9    |
| Revenue                                                | 2 6     | 3 1 10  | 3 1 6    |
| Profit                                                 |         | 2 1 11  | 1 13 9   |
| Loss                                                   | 17 0    |         |          |

# WORK IN CONNECTION WITH THE SUGAR CANE CROP.

## Field Statistics.

As has been customary in recent years a questionnaire was sent by the Agricultural Department to each estate in the island with a view to obtaining definite information as to the acreages under the different varieties, the manurial treatment of the fields and the methods of cultivation.

Information was received with respect to 2,438.5 acres which is by far the greater portion of the estate plant cane acreage.

As regards varieties the following Tables show:—

(I) The actual and percentage plant cane acreages under the different varieties reported with respect to the 1939 crop.

(II) The relative areas planted under the more widely grown varieties for the seasons 1934—1939 inclusive.

### 1939 CROP.

| Plant Canes for 1939<br>Variety |      |      | Acreages under different<br>Varieties |                       |
|---------------------------------|------|------|---------------------------------------|-----------------------|
|                                 |      |      | Acres                                 | % Reported<br>acreage |
| Ba.11569                        | .... | .... | 934.25                                | 38.3                  |
| B.2935                          | .... | .... | 604.25                                | 24.8                  |
| B.H. 10.12                      | .... | .... | 428.25                                | 17.6                  |
| P.O.J. 2878                     | .... | .... | 149.00                                | 6.1                   |
| Mixed ....                      | .... | .... | 143.50                                | 5.9                   |
| B.726 ....                      | .... | .... | 86.50                                 | 3.5                   |
| B.147 (B.4507)                  | .... | .... | 46.00                                 | 1.9                   |
| Co.213                          | .... | .... | 24.00                                 | 1.0                   |
| B.6308                          | .... | .... | 8.25                                  | 0.33                  |
| S.C.12.4                        | .... | ...  | 6.00                                  | 0.20                  |
| G.119                           | .... | .... | 5.00                                  | 0.20                  |
| Co.291                          | .... | .... | 2.00                                  | 0.10                  |
| M.28                            | .... | .... | 1.00                                  | 0.05                  |
| B.3439                          | .... | .... | 0.50                                  | 0.02                  |

### RELATIVE AREAS OF PLANT CANE UNDER CHIEF VARIETIES, 1934—1939.

| Year | Ba.11569 | B.2935 | B.H. 10.12 | P.O.J.<br>2878 | B.726 | B.147<br>(B.4507) |
|------|----------|--------|------------|----------------|-------|-------------------|
| 1934 | 14.0     | Nil    | 37.2       | 9.3            | Nil   | 26.0              |
| 1935 | 21.5     | Nil    | 43.6       | 10.4           | 0.9   | 9.9               |
| 1936 | 23.0     | 0.8    | 35.7       | 20.2           | 1.3   | 8.6               |
| 1937 | 33.0     | 9.1    | 24.6       | 6.5            | 3.1   | 11.9              |
| 1938 | 36.2     | 13.8   | 20.7       | 4.1            | 2.5   | 13.3              |
| 1939 | 38.3     | 24.8   | 17.6       | 6.1            | 3.5   | 1.9               |



Since 1935 there has been a continuous decrease in the area under B.H.10.12, this cane being replaced chiefly by Ba.11569 which has proved itself superior to B.H.10.12 in most districts of Antigua under the difficult climatic conditions which generally prevail.

The rapid increase in the area under B.2935 is noteworthy. This variety is the most suitable for the lighter calcareous soils but its extension on poorly drained soils is inadvisable, as on such soils it is almost certain to fail in the ratoon crops.

In 1937 and 1938 there was an increase in the area under B.147 (B.4507), resulting probably from the improvement in germination observed after lime water treatment. It is definitely inferior to B.2935 and Ba.11569 even on the lighter calcareous soils to which it is best suited, and the rapid reduction of the area cultivated with this cane is well justified.

P.O.J.2878 continues to be cultivated on certain poorly drained alluvial soils in districts of fair rainfall where its rapid establishment makes it a useful variety on grassy fields. It is generally unsuitable for the drier districts.

It will be observed that B.3439, one of the promising new seedlings has made its appearance. This variety is included in two varietal trials for reaping in 1939, and in five for the 1940 crop.

The following tables show respectively the method of cultivation of the fields prepared for the 1937, 1938 and 1939 crops and the manurial treatment.

|                 | Gyrotiller |        | Tractor |        | Cattle<br>Plough | Total    |
|-----------------|------------|--------|---------|--------|------------------|----------|
|                 | Flat       | Banked | Flat    | Banked |                  |          |
| For 1937, Acres | 543.25     | 262.0  | 282.25  | 90.0   | 1,793.5          | 2,791.00 |
| % area reported | 18.3       | 8.8    | 9.5     | 3.0    | 60.4             | 100.00   |
| For 1938, Acres | 228.25     | 105.5  | 244.0   | 49.5   | 1,649.0          | 2,276.25 |
| % area reported | 10.0       | 4.6    | 10.7    | 2.2    | 72.5             | 100.00   |
| For 1939, Acres | 267.25     | 210.75 | 83.0    | 81.0   | 1,796.5          | 2,438.50 |
| % area reported | 10.9       | 8.6    | 3.4     | 3.3    | 73.8             | 100.00   |

The acreage ploughed by tractor is smaller than has been the case in recent years. This appears to be due in part to the employment of tractors in transportation of cane during the exceptionally heavy 1937 crop at a time when ordinarily they would have been used for purposes of cultivation.

MANURIAL TREATMENT.

|                            | Pen<br>Manure | Pen<br>Manure<br>and<br>Inorganics | Filter<br>Press<br>Mud | Filter<br>Press<br>Mud<br>and<br>Inorganics | Sheep<br>Manure | Sheep<br>Manure<br>and<br>Inorganics | Inorganics<br>only | Ashes | No<br>Manure | Total    |
|----------------------------|---------------|------------------------------------|------------------------|---------------------------------------------|-----------------|--------------------------------------|--------------------|-------|--------------|----------|
| For 1937, acres            | 2,140.8       |                                    | 266.5                  |                                             | 111.25          |                                      | 48.0               |       | 399.25       | 2,971.0  |
| % of area re-<br>ported .. | 72.1          |                                    | 9.0                    |                                             | 3.8             |                                      | 1.6                |       | 13.5         | 100.0    |
| For 1938, acres            | 1,038.75      | 364.0                              | 104.25                 | 73.5                                        | 110.25          |                                      | 234.75             | 9.0   | 341.75       | 2,276.25 |
| % of area re-<br>ported .. | 45.7          | 16.0                               | 4.6                    | 3.2                                         | 4.8             |                                      | 10.3               | 0.4   | 15.0         | 100.0    |
| For 1939, acres            | 941.5         | 624.75                             | 77.50                  | 122.5                                       | 19.0            | 85.5                                 | 372.5              |       | 195.25       | 2,438.5  |
| % of area re-<br>ported .. | 38.6          | 25.7                               | 3.2                    | 5.0                                         | 0.8             | 3.5                                  | 15.2               |       | 8.0          | 100.0    |

Since 1937 there has been a marked increase in the area with inorganic fertilizers. In 1937 only 1.6% of the plant cane area received inorganics, in 1938 29.5% and in 1939 49.4% of the total area received inorganic fertilizers, either alone or together with pen manure, sheep manure or filter press mud.

The area receiving no manure of any kind has now been reduced to 8% of the acreage reported.

The following figures with respect to imports of inorganic fertilizers indicate the considerable increase in their use in recent years since the inception of the Sugar Cane Experiment Scheme.



| Year | Value of Fertilizer Imports |      |      |        |
|------|-----------------------------|------|------|--------|
| 1934 | ....                        | .... | .... | £2,388 |
| 1935 | ....                        | .... | .... | £2,069 |
| 1936 | ....                        | .... | .... | £2,748 |
| 1937 | ....                        | .... | .... | £3,962 |
| 1938 | ....                        | .... | .... | £4,449 |

Figures for the quantities of the different fertilizers imported are not available earlier than 1936. The following table gives the figures for the years 1936—1938 inclusive.

|                               |      |      |      | 1936. | 1937. | 1938.          |
|-------------------------------|------|------|------|-------|-------|----------------|
|                               |      |      |      | Tons. | Tons. | Tons.          |
| Sulphate of Ammonia           | .... | .... | .... | 317.0 | 376   | 231            |
| Niciphos                      | .... | .... | .... | 25.0  | 75.5  | 180            |
| Ammophos                      | .... | .... | .... | ....  | ....  | 5              |
| Superphosphate                | .... | .... | .... | 122.0 | 127   | 45             |
| Muriate or Sulphate of Potash | .... | .... | .... | 10.5  | 5.0   | 5              |
| Complete Inorganic            | .... | .... | .... | ....  | 5.0   | ....           |
| Miscellaneous *               | .... | .... | .... | ....  | ....  | £40<br>(Value) |

#### SUGAR CANE EXPERIMENTS.

The experiments reported in this Section form portion of a comprehensive series of experiments conducted under the auspices of the Antigua Sugar Cane Investigation Committee and under the direction of Mr. P. E. Turner, Adviser in Sugar Cane Experiments to the Commissioner of Agriculture.

Originally the experiments on the Gunthorpe, Tudway and Codrington Estates and on Delaps were under the control of Mr. C. F. Charter, Agronomist to the Gunthorpe Estates, while the remaining experiments were under the control of the Agricultural Department. Mr. Charter, however, left Antigua during 1937 and those experiments planted by him for the 1938 crop were reaped under supervision by the Agricultural Department.

A summary of the results of certain of these latter experiments is included in this section, but details as to sites, layout of experiments and yield data are given in Appendix II only with respect to those experiments entirely under the control of the Department.

The thanks of the Agricultural Superintendent are due to Mr. Turner for soil analyses, for statistical analysis of the results and for general advice and assistance in the preparation of this Report.

#### VARIETAL EXPERIMENTS.

The conclusions recorded in the 1937 Report have in general been confirmed by the results obtained in 1938.

B.2935 has proved the outstanding variety both as plant cane and as a ratoon on soils of the Fitches suite, filling first place as a plant cane at Comfort Hall and at Vernons,† and as a ratoon at Gaynors, High Point and Cassada Garden.†

B.2935 has done well as a plant cane on a Gunthorpe Clay at Blakes but has been beaten by Ba.11569 and B.H.10.12 on Gunthorpe Clay at North Sound† and Otto Clay at La Roches.

It has failed completely as a ratoon on a soil transitional between Fitches and Gunthorpe Clays at Yeamans and on Blubber Valley Loam at Jolly Hill and has been beaten by P.O.J.2878 and Ba.11569 as a ratoon on Gunthorpe Clay at Fitches Creek.†

\* Magnesium Sulphate, Borax, etc.

† Experiments planted by C. F. Charter.

It has done well as a ratoon on a Tomlinson Clay,\* almost equalling Ba.11569. This field was well cambered and the plant cane crop received phosphate and nitrogen.

B.2935 can now be confidently recommended as the best variety for soils of the Fitches suite. Its extension on other soils should be watched with care as on heavy poorly drained soils there is a marked tendency for failure in the ratoon crop.

Ba.11569 has done well both as a plant cane and as a ratoon in all the experiments in which it was included. This variety is the most suitable on Gunthorpe, Otto and Tomlinson Clays, and almost certainly on Lindsey Clays for which precise experimental results are still lacking.

Ba.11569 also gives good results on the Blubber Valley soils, where however, P.G.J.2878, although not a good Factory cane, is a possible competitor, especially on wet poorly drained grassy soils where its ready germination, spreading habit and early closing indefinitely reduce weeding costs.

B.147 (B.4507) has now proved definitely inferior to B.2935 and Ba.11569 even on the soils of Fitches suite, the only soil type on which it ever succeeded—vide Experiments at Vernons,\* Comfort Hall, Gaynors, High Point and Cassada Garden.\* Cultivation of this variety should be discontinued.

B.H.10.12 has been beaten by B.2935 and Ba.11569 in all experiments on Fitches Clay in which it has been included, and by Ba.11569 in the experiments on the other soil types on which they both have been grown. This variety has done well on alluvial soils (Bendal and Blubber Valley soils), on Fitches Clays, Calcareous Gunthorpe Clays and the more fertile Otto Clay soils under conditions of fair rainfall, but it appears that on most of these soils heavier yields will be obtained from Ba. 11569.

B.H.10.12 and Ba.11569 are now being compared in a varietal trial on Bendal Clay at the Greencastle Experiment Station.

In experiments in which it has been included the yield of B.726 has been much the same as that of B.H.10.12.

Co.213 is grown to some extent on certain shallow soils on hillsides in the North and Northeast parts of the island and on Tomlinson Clays in the Paynters area. It has proved inferior as a plant cane to B.2935 and Ba.11569 on Fitches Clay at Comfort Hall and also on Tomlinson Clay at Tomlinsons. It is generally an easily established variety with rapid spreading early growth in virtue of which it succeeds in fields where cultivation is indifferent or which are grassy.

#### MANURIAL AND CULTURAL EXPERIMENTS.

It was stated in the Report for 1937 that experimental results to date indicated that considerable immediate gains in yield can be obtained by the application of inorganic fertilizers to Antigua soils, and that these gains can exceed those resulting from an average application of Pen Manure.

Manurial experiments reaped as plant canes during 1938 have indicated that the immediate gains from inorganic fertilizers may be smaller in a season where abnormal rainfall is experienced during the early months of the cane's life. Under such conditions as existed in December 1936 and January and February 1937 the availability of the soil phosphate is likely to be greater than is normally the case at that time of year, so that the need for additional phosphate is less and moreover the rate of growth of the plants is likely to be accelerated to such an extent as to reduce the age at which early manures should be applied if they are to be effective.

Significant responses to inorganic manures have however been observed at several stations. Considerable gains from Nitrogen as Sulphate of Ammonia in the presence of basal Phosphate and Potash resulted on Gunthorpe Clay at Cassada Garden, No. 13,\* and on Bendal Clay at Belvidere. Only small and statistically non-significant gains from Sulphate of Ammonia in the presence of Phosphate and Potash were observed on Fitches Clay at Long Lane and at Cedar Valley\* and on Gunthorpe Clay at Fitches Creek\*—in the latter experiment, however, there was no treatment entirely without nitrogen.

Small but significant gains in yield from Phosphate together with Potash have been observed on Gunthorpe Clay at Fitches Creek 17\*; while gains from both Phosphate and Potash have resulted on Fitches Clay at Cedar Valley;\* from Phosphate on Gunthorpe Clay at Cassada Garden,\* and from Potash on Otto Clay at Ottos. In the three last quoted experiments Phosphate and Potash have been applied in the presence of basal Nitrogen.

\* Experiments planted by O. F. Charter.



No significant gains from Phosphate or Potash were observed in the presence of basal Nitrogen on Gunthorpe Clay at Fitches Creek 23\* nor on Fitches Clay at Winthorpes, Langfords and Cassada Garden 27\* under the rainfall conditions which obtained.

No gains from a complete inorganic manure resulted on a highly calcareous Fitenes Clay at Betty's Hope.

Only one experiment in which Pen Manure was applied to plant canes was reaped as a plant cane during 1938. In this experiment on Bendal Clay at Greencastle Experiment Station which contained no 'no manure' plots, there was no statistically significant difference in yield between the Pen Manure and the complete inorganic plots.

Residual gains in yield from Pen Manure were observed in the second ratoon crop at Pares and Cochranes on Fitches Clay and on first ratoons on Fitches Clay at Long Lane and Parham Old Work\* and on a transitional soil (Fitches Clay and Gunthorpe Clay) at Ffryes.

At Long Lane and at Ffryes immediate gains in the plant cane resulting from a complete inorganic had exceeded those from Pen Manure alone. In the case of the first ratoons the resulting gains from the complete inorganic fertilizer applied to the ratoons exceeded the residual gains from Pen Manure at all three stations.

Considerable and statistically significant gains in yield of the first ratoon crop resulted from the application of Sulphate of Ammonia to the ratoons at Millars and Bodkins on Fitches Clay and Gunthorpe Clay respectively. Significant and considerable gains in yield resulted from applications of Sulphate of Ammonia and of Phosphate to ratoons at Sandersons (Gunthorpe Clay). The gains from each fertilizer being the greater when both were applied together. Similar results were obtained on Gunthorpe Clay at Fitches Creek\* and at Cassada Garden.\* On Fitches Clay at the Diamond significant gains in yield of first ratoons resulted from applications of Sulphate of Ammonia and of Phosphate.

On Gunthorpe Clay at North Sound\* significant gains in yield of ratoons followed applications of Sulphate of Ammonia and of Sulphate of Potash.

In all these experiments statistically significant gains in yield of the plant cane crop had resulted from inorganic fertilizers.

It has long been customary to apply Sulphate of Ammonia to ratoons, but frequently this practice is omitted in the case of second ratoons. At Greencastle on Bendal Clay a gain in yield of second ratoons of 3.31 tons cane per acre has resulted from application of 2 cwt. Sulphate of Ammonia.

Residual gains in yield from trash mulch applied to the plant cane crop were observed on first ratoons on Fitches Clay at Winthorpes. These gains were greatest in the presence of a complete inorganic manure applied both to the plant canes and to the ratoons.

In one experiment on a highly calcareous Fitches Clay, small but significant gains in yield resulted from spraying with ferrous sulphate. The response to fertilizers on such soils may be determined not only by the available iron but also by the availability of such elements as magnesium, manganese and Boron. Two experiments with these three elements have been planted at the end of 1938 for reaping in 1940.

One experiment on a highly calcareous Fitches Clay was conducted with the varieties B.H.10.12 and Ba.11569 subjected to various soaking treatments—Nil, 0.5% Ferrous sulphate solution and saturated lime water. In the case of both varieties germination and total yield were highest with the plants soaked in lime water. In the case of Ba.11569 germination and yield were higher for the plants soaked in Ferrous Sulphate than for the unsoaked plants, the reverse was true for B.H.10.12.

Our present knowledge of the manurial requirements of sugar cane in Antigua may be briefly summarised as follows:—

Plant canes will normally respond to early applications of Pen Manure, Filter Press Mud and inorganic mixtures containing Nitrogen and Phosphate. Potash appears to be beneficial on certain soils but is less generally required than Nitrogen and Phosphate.

The beneficial effects of Pen Manure and of Filter Press Mud persist in the ratoon crops.

Ratoons respond to applications of inorganic fertilizers, especially to Sulphate of Ammonia. On many soils, however, this response to Nitrogen is greatest in the presence of phosphate. Occasionally Potash is beneficial.

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\* Experiments planted by O. F. Charter.

## WORK IN CONNECTION WITH THE COTTON CROP.

*Seed Selection.* The method followed in recent years of establishing a seed field on Thibou's Estate with pedigree seed obtained from the Montserrat Agricultural Department was again adopted in 1938.

By this system a fresh supply of pedigree seed is obtained annually for multiplication at Thibou's, and in the succeeding year the total acreage at Thibou's (except the new pedigree seed field) is planted with the seed from this plot and in addition, as large an acreage elsewhere as is possible. Until 1937 it was found possible to plant the whole cotton acreage of Antigua either with seed from the Thibou's pedigree seed field or with Thibou's seed one generation further removed from the Montserrat pedigree seed, but the increased area planted in that year and the poor germination of some of the local seed resulting from the excessively wet crop season when the seed was reaped made it necessary to import some quantity of ordinary commercial Montserrat seed for general planting.

In 1938 it was found possible again to use only Thibou's seed despite the fact that 10,008 lb. were distributed for planting purposes, and it is believed that sufficient Thibou's seed will again be available for the 1939—40 crop.

*Pink Boll Worm Control.* The 1938 Close Season extended from May 1st to August 15th inclusive, an increase of one month over the usual period and the Planting Season was limited to six weeks, viz., August 15th to September 30th. Strenuous efforts were also made to eradicate wild cotton the presence of which in certain plant associations is recognised as one of the major problems in Pink Boll Worm control in Antigua.

Unfortunately, owing to the severe drought which lasted until the end of May and the consequent prevalence of serious bush and cane fires, the regulation with respect to the burning of cotton plants and fallen bolls had to be suspended until the rains broke, so that while uprooting was completed before May 1st burning was not carried out until some time after the commencement of the Close Season. Very heavy rains fell in June and this fact coupled with the prolonged Close Season was apparently the cause of a definite reduction in Pink Boll Worm infection during the earlier months of the 1938-39 crop.

*Cotton Varietal Experiment.* A Varietal Experiment with the following strains of Sea Island cotton was planted at Crosby's Estate:—

Barbados superfine, Montserrat, St. Vincent V.135, St. Vincent A.N., Ordinary St. Vincent B.D., and Nevis.

## LAND SETTLEMENT.

A detailed account of the progress of the various settlements during the year under review is contained in Appendix III.

The following Table shows the quantity and the value of the cane crops from the settlements at Greencastle, Matthews, Jonas' and the Folly for the period 1932—1938 inclusive:

| Year.                 | 1932 | 1933. | 1934 | 1935 | 1936. | 1937. | 1938. |
|-----------------------|------|-------|------|------|-------|-------|-------|
| Cane—tons ....        | 405  | 1924  | 2907 | 2716 | 5127  | 6960  | 5390  |
| Gross Value £         | 258  | 1342  | 2044 | 1878 | 3544  | 5242  | 3867  |
| Marketing Charges* £  | 1    | 9     | 25   | 39   | 79    | 102   | 87    |
| Deductions** .... £   | 84   | 350   | 471  | 488  | 616   | 673   | 761   |
| Cash paid allottees £ | 173  | 983   | 1548 | 1351 | 2849  | 4467  | 3019  |

The land Settlement cane crop in 1938 was only 78% of the 1937 crop but the whole island crop was only 68% of that reaped in 1937.

\* Weighing, packing and supervision.

\*\* Rents and repayment of loans.



## **AGRICULTURAL EDUCATION.**

Monthly lectures to teachers in the Primary schools were given by the Agricultural Superintendent.

## **CORRESPONDENCE.**

During the year 155 Minute Papers were dealt with, 211 letters were received and 449 despatched.

## **AGRICULTURAL SHOW.**

An Agricultural, Horticultural and Industrial Exhibition was held in January, 1938, under the auspices of the Antigua Agricultural and Commercial Society.

## **OFFICIAL VISITS.**

Visits were paid to the Experiment Station by Mr. G. A. Jones, Dip. Agric., Commissioner of Agriculture; Mr. C. C. Skeete, B.A., Assistant Commissioner of Agriculture; Mr. P. E. Turner, M.Sc., F.I.C., Adviser in Sugar Cane Experiments to the Commissioner of Agriculture; Lord Moyne, D.S.O., Chairman of the West Indian Royal Commission; and Professor Engledow, C.M.G., also of the West Indian Royal Commission.

# SECTION III. FINANCIAL STATEMENT AND STAFF OF THE DEPARTMENT.

## FINANCIAL STATEMENT.

| Head VII. Agriculture.                                                       |      |      |        | Expenditure |    |        | Revenue |    |    |
|------------------------------------------------------------------------------|------|------|--------|-------------|----|--------|---------|----|----|
| Salaries                                                                     | .... | .... | £1,194 | 3           | 8  |        |         |    |    |
| House Allowance                                                              | .... | .... | 40     | 0           | 0  |        |         |    |    |
| Transport Allowances                                                         | .... | .... | 198    | 19          | 10 |        |         |    |    |
| Greencastle and other Ex-<br>perimental Work                                 | .... | .... | 344    | 19          | 0  |        |         |    |    |
| Sugar Cane Experiments                                                       | .... | .... | 99     | 19          | 5  |        |         |    |    |
| Planting and Maintaining<br>Trees                                            | .... | .... | 29     | 18          | 11 |        |         |    |    |
| Fumigation of Plants                                                         | .... | .... | 1      | 13          | 9  |        |         |    |    |
| Printing Reports and Con-<br>tingencies                                      | .... | .... | 22     | 9           | 2  |        |         |    |    |
| Destruction of Wild Cotton<br>and Okra Plants                                | .... | .... | 39     | 19          | 8  |        |         |    |    |
| Temporary Cotton Inspectors                                                  | .... | .... | 64     | 16          | 0  |        |         |    |    |
| Contribution to Central Cane<br>Breeding Station                             | .... | .... | 212    | 10          | 0  |        |         |    |    |
| Agricultural Exhibition                                                      | .... | .... | 60     | 0           | 0  |        |         |    |    |
| Upkeep, Botanic Station                                                      | .... | .... | 109    | 16          | 10 | £2,419 | 6       | 3  |    |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Revenue of Experiment Sta-<br>tion                                           | .... | .... |        |             |    | £220   | 16      | 2  |    |
| Profit on Sale of Onion and<br>Vegetable Seeds                               | .... | .... |        |             |    | 10     | 0       | 4  |    |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Head XV. Govt. Undertakings.                                                 |      |      |        |             |    |        |         |    |    |
| (2) Land Settlement.                                                         |      |      |        |             |    |        |         |    |    |
| Land Officer's Department.                                                   |      |      |        |             |    |        |         |    |    |
| Salary and Travelling                                                        | .... | .... | £      | 60          | 0  | 2      | 60      | 0  | 2  |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Agricultural Development.                                                    |      |      |        |             |    |        |         |    |    |
| Supervision                                                                  | .... | .... | £      | 42          | 0  | 0      |         |    |    |
| Planting Material                                                            | .... | .... |        | 1           | 8  | 9      |         |    |    |
| Drains                                                                       | .... | .... |        | 37          | 11 | 7      |         |    |    |
| Roads                                                                        | .... | .... |        | 40          | 12 | 2      |         |    |    |
| Miscellaneous                                                                | .... | .... |        | 10          | 6  |        | 122     | 3  | 0  |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Payment for Land and Hous-<br>es collected through the<br>Agricultural Dept. | .... | .... |        |             |    |        | 428     | 16 | 6½ |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Advance Accounts.                                                            |      |      |        |             |    |        |         |    |    |
| Vegetable and Onion Seed<br>A/c                                              | .... | .... | £      | 22          | 12 | 4      |         |    |    |
| Fertilizer Account                                                           | .... | .... |        | 190         | 19 | 4      |         |    |    |
| Cultivation Account                                                          | .... | .... |        | 241         | 14 | 5      | 455     | 6  | 1  |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Sale of Vegetable & Onion Seed.                                              |      |      |        |             |    |        |         |    |    |
| £32. 12. 8. less £10. 0. 4.<br>transferred to Revenue                        |      |      |        |             |    |        | 22      | 12 | 4  |
| Fertilizer A/c—Cash                                                          | .... | .... |        |             |    |        |         | 16 | 8  |
| Fertilizer A/c—Transfer                                                      | .... | .... |        |             |    |        | 103     | 2  | 4  |
| Cultivation A/c — Transfer                                                   |      |      |        |             |    |        | 221     | 17 | 3½ |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Total Expenditure & Receipts                                                 |      |      |        |             |    | 3,056  | 15      | 6  |    |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Deposit Account Sale of Crops                                                |      |      |        |             |    |        |         |    |    |
| Peasant Cane Payments                                                        | .... | .... | 3,255  | 16          | 7  |        |         |    |    |
| Reaping costs                                                                | .... | .... | 80     | 17          | 10 |        |         |    |    |
| Transfer to Revenue—Pro-<br>duce of Experiment<br>Station                    | .... | .... | 220    | 16          | 2  |        |         |    |    |
| Transfer to Revenue—Pay-<br>ments for Land and<br>Houses                     | .... | .... | 428    | 16          | 6  |        |         |    |    |
| Transfer to Fertilizer A/c                                                   | .... | .... | 103    | 2           | 4  |        |         |    |    |
| Transfer to Cultivation<br>A/c                                               | .... | .... | 221    | 17          | 3½ |        |         |    |    |
| Balance on year's working<br>left in A/c                                     | .... | .... | 7      | 6           | 0½ | 4,318  | 12      | 9  |    |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |
| Receipts from sale of canes<br>and other produce                             | .... | .... |        |             |    | 4,318  | 12      | 9  |    |
| <hr/>                                                                        |      |      |        |             |    |        |         |    |    |



## STAFF OF THE DEPARTMENT.

|                                   |      |                                         |
|-----------------------------------|------|-----------------------------------------|
| Agricultural Superintendent       | .... | F. H. S. Warneford, M.A., B.Sc., A.I.C. |
| Agricultural Assistant            | .... | Vacant.                                 |
| Junior Assistant                  | .... | V. G. Pereira.                          |
| Assistant Clerk (Office)          | .... | S. L. Henry.                            |
| Field Assistant (Assistant Clerk) | .... | C. K. G. Vieira.                        |
| Cotton Inspector                  | .... | S. H. Abbott.                           |
| Foreman, Experiment Station       | .... | R. E. M. Whyte.                         |

The Agricultural Superintendent was on Vacation Leave from April 19th to 30th and again from August 2nd to 12th, and on Sick Leave from December 21st to 24th. Mr. Pereira was on Vacation Leave from June 15th to July 15th. Mr. Abbott was on Sick Leave from October 10th to 15th. Mr. Henry was on Sick Leave from September 20th to 24th. Mr. Vieira was on Vacation Leave from October 7th to 22nd.

### SECTION IV. SUMMARY OF LEGISLATION AFFECTING AGRICULTURE.

#### I. PLANT QUARANTINE.

##### 1. EXTERNAL—IMPORT PROHIBITIONS.

The introduction of all plant material is regulated under the Plants Protection Ordinance, No. 16 of 1923, and cognate subordinate legislation.

The following schedules indicate those articles whose importation is absolutely prohibited and those whose importation is permitted only under license granted by the Governor.

#### THE FIRST SCHEDULE.

##### ARTICLES ABSOLUTELY PROHIBITED.

| Articles prohibited from importation.                                                                                                                                                           | Countries and places from whence importation prohibited.                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) The fruit of the banana                                                                                                                                                                     | All countries and places except the United States of America and the other islands of the Leeward Islands Colony                                                 |
| (b) All fruit and plants of the citrus family and parts of such fruit and plants                                                                                                                | Cuba, Haiti, Santo Domingo, Jamaica, Venezuela, and the United States of America.                                                                                |
| (c) All other fruit except<br>(i) plantains<br>(ii) nuts<br>(iii) dried, canned, candied or other preserved fruits                                                                              | Bahamas, Bermuda, British Guiana, and all other countries and places except the British Isles, Canada, the British West Indies and the United States of America. |
| (d) All vegetables except<br>(i) onions<br>(ii) Irish potatoes<br>(iii) canned or preserved vegetables                                                                                          | ditto ditto                                                                                                                                                      |
| (e) Pimento and the Bay Tree (Pimenta Aeris)                                                                                                                                                    | Jamaica.                                                                                                                                                         |
| (f) Cotton Seed, cotton seed hulls, cake and meal and other cotton seed products, seed cotton, cotton lint and any part of the cotton plant and any other malvaceous plant and any part thereof | Cuba, Haiti and Santo Domingo.                                                                                                                                   |
| (g) Fertilizers and stock feeds containing cotton seed meal                                                                                                                                     | ditto ditto                                                                                                                                                      |
| (h) Pillows and bedding material containing seed cotton, cotton lint or any part of the cotton plant                                                                                            | ditto ditto                                                                                                                                                      |

| Articles Prohibited from Importation.                                                                                                                                                                                                                                                      | Countries and Places from whence Importation Prohibited.                                                                                                                                                                   |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| (i) All agricultural produce in bags ....                                                                                                                                                                                                                                                  | Cuba, Haiti, and Santo Domingo.                                                                                                                                                                                            |       |
| (j) Second-hand empty bags and baling material ....                                                                                                                                                                                                                                        | ditto                                                                                                                                                                                                                      | ditto |
| (k) Packages, containers and coverings which contain or are reasonably suspected to have contained any of the articles specified in item (f) hereof ....                                                                                                                                   | ditto                                                                                                                                                                                                                      | ditto |
| (l) Personal baggage and effects of any description which contain or are reasonably suspected to have contained any of the articles specified in item (f) hereof ....                                                                                                                      | ditto                                                                                                                                                                                                                      | ditto |
| (m) Personal baggage and effects of any description which have been in contact or in close proximity to other baggage, cargo, produce or articles of any description infected or reasonably suspected to be infected with the cotton boll weevil ( <i>Anthonomus grandis</i> Boheman) .... | All countries and places.                                                                                                                                                                                                  |       |
| (n) Articles which have formed part of the cargo of a ship another part of the cargo of which has been found to be infected or is reasonably suspected to be infected with the cotton boll weevil ( <i>Anthonomus grandis</i> Boheman) ....                                                | All countries and places.                                                                                                                                                                                                  |       |
| (o) Soil ....                                                                                                                                                                                                                                                                              | Bahamas, Bermuda, British Guiana, Trinidad and all other countries and places except the British Isles, Canada, the other islands of the British West Indies not specified in this item, and the United States of America. |       |



# THE SECOND SCHEDULE.

## ARTICLES PROHIBITED CONDITIONALLY.

| Articles                                                                                                                                                                                                                   | Conditions of importation                                                                                                                                                        | Countries and places                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (a) Sugar cane, sugar cane seedlings and plants, and all parts of the sugar cane.                                                                                                                                          | Under licence granted by the Governor.                                                                                                                                           | All countries and places.                                                                                                                                             |
| (b) Banana plants and parts of banana plants.                                                                                                                                                                              | ditto.                                                                                                                                                                           | ditto.                                                                                                                                                                |
| (c) Cotton seed, cotton lint, seed cotton and all packages, coverings, containers, bags and other articles and things which have been used as packings, coverings or bags for any cotton seed, cotton lint or seed cotton. | ditto.                                                                                                                                                                           | All countries and places other than Cuba, Haiti and Santo Domingo.                                                                                                    |
| (d) Sprouted coconuts.                                                                                                                                                                                                     | ditto.                                                                                                                                                                           | Trinidad, St. Vincent, St. Lucia, Grenada, Cuba, Jamaica and all parts of Central and South America                                                                   |
| (e) All fruits and plants of the citrus family and parts of such fruit or plant.                                                                                                                                           | ditto.                                                                                                                                                                           | All countries and places other than Cuba, Haiti, Santo Domingo, Jamaica, Venezuela, the United States of America and the other islands of the Leeward Islands Colony. |
| (f) Soil and plants growing in soil.                                                                                                                                                                                       | Under licence granted by the Governor and subject to fumigation immediately on landing.                                                                                          | All countries and places                                                                                                                                              |
| (g) All other fruit except<br>(i) Plantains<br>(ii) Nuts<br>(iii) Dried, canned, candied or other processed fruits.                                                                                                        | To be accompanied by a Certificate of origin from a responsible authority stating that such fruit was not grown in a country or place from whence its importation is prohibited. | The British Isles, Canada, the United States of America and the British West Indies except the other islands of the Leeward Islands Colony.                           |
| (h) All vegetables except<br>(i) Onions<br>(ii) Irish potatoes<br>(iii) Canned or preserved vegetables.                                                                                                                    | ditto.                                                                                                                                                                           | ditto.                                                                                                                                                                |

## II. INTERNAL—CONTROL OF DISEASES AND PESTS WITHIN THE PRESIDENCY.

(1) Plant Fumigation Ordinance No. 5 of 1905. This provides for the fumigation of plants imported into the Presidency—at the discretion of the agricultural authority.

(2) Plant Protection Ordinance No. 16 of 1923. This is an Ordinance for the prevention and eradication of diseases and pests affecting vegetation.

(3) The Cotton Protection Ordinance No. 7 of 1922, and the following Amendment Ordinances, Nos. 5 of 1926, 8 of 1927, 14 of 1929 and 1 of 1938 provide the necessary legislation for the enforcement of a Close Season for cotton and such other plants as may be specified by the Governor and empower the Governor to make regulations with respect to the control of ginneries, fumigation and disinfection of seed for planting, storage of cotton seed, etc., and disposal of cotton seed, seed cotton, etc.

Regulations made by the Governor in Council on 3rd May 1922, under Section 13 of the Cotton Protection Ordinance, No. 7 of 1922, summarise the position with respect to these matters.

The Cotton Protection Regulations 1926 of March 22nd 1926 extend the Close Season Regulations to Okra plants.

A Proclamation dated 14th April, 1924, under the Plant Protection Ordinance, No. 16 of 1923 proclaims Mosaic disease of Sugar Cane to be a disease within the meaning of the Ordinance, and Regulations made on April 25th, 1924 provide for notification by any owner or occupier of land who suspects the existence of Mosaic disease.

## ANIMAL QUARANTINE.

### I.—EXTERNAL—IMPORT PROHIBITIONS.

The importation of all animals is regulated under the Diseases of Animals Ordinance, No. 16 of 1913, as amended by Federal Act No. 10 of 1916 and Ordinance No. 8 of 1920, and by subordinate cognate legislation.

The following prohibitions were in force on December 31st, 1938.

| Prohibited Importations                                                                                                                                           | Country of Origin | Reason                  | Index of Legislation                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------------------|-------------------------------------------------------------|
| Cattle, sheep, pigs and goats, unless detained and isolated under official Veterinary supervision for at least 14 days at the East India Dock Quarantine Station. | United Kingdom    | Foot and Mouth Disease. | Order in Council of 16th May 1924 and S.R. & O. 17 of 1929. |
| All animals unless accompanied by a veterinary certificate.                                                                                                       |                   |                         | S.R. & O. 20 of 1933.                                       |

## II. INTERNAL—CONTROL OF DISEASES AND PESTS WITHIN THE PRESIDENCY.

(1) Swine Epidemic Act, No. 3 of 1893.

(2) Diseases of Animals Ordinance, No. 16 of 1913 as amended by Federal Act No.10 of 1916 and Ordinance No. 8 of 1920.

This Ordinance empowers the appointment of an inspector, the slaughter of certain diseased animals, and provides for regulations for disinfection, disposal of dead animals, regulation of movement, etc.

S. R. & O. No. 2 of 1938 provides for the inspection of all foreign animals prior to landing.



MISCELLANEOUS LEGISLATION AFFECTING AGRICULTURAL  
INDUSTRIES.

| Measure.                             | Object                                                                                                                          | Index of Legislation.                                                                                        |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 1. Protection.                       |                                                                                                                                 |                                                                                                              |
| (a) Turtle and Tortoises             | Close Season                                                                                                                    | Ordinance No. 17 of 1927                                                                                     |
| (b) Wild Birds Protection            | do                                                                                                                              | " No. 3 of 1913                                                                                              |
| (c) Cotton Traffic                   | Prevention of Larceny and regulation of local traffic in cotton.                                                                | " No. 5 of 1906                                                                                              |
| (d) Produce Protection.              | Prevention of Prædial Larceny                                                                                                   | " No. 20 of 1922<br>" No. 16 of 1926<br>Order in Council of 13th November, 1922.<br>S.R. & O. No. 11 of 1928 |
| (e) Bush Fires                       | Protection of Forest Growth                                                                                                     | Ordinance No. 5 of 1901<br>" No. 24 of 1922                                                                  |
| 2. Crown Lands                       | Land Settlement                                                                                                                 | " No. 5 of 1917<br>S.R. & O. No. 24 of 1930                                                                  |
| 3. Animals Tax                       | Revenue                                                                                                                         | Ordinance No. 10 of 1922<br>" No. 5 of 1927<br>" No. 20 of 1929<br>" No. 10 of 1931<br>" No. 2 of 1939       |
| 4. Cotton Planting                   | A close planting season during which while cotton may be growing, no cotton may be planted.                                     | Ordinance No. 1 of 1931                                                                                      |
| 5. Cotton Seed Control               | To ensure the planting of seed of good quality.                                                                                 | " No. 10 of 1932                                                                                             |
| 6. Cotton Export Levy Ordinance      | To provide for a contribution to the West Indian Sea Island Cotton Association.                                                 | " No. 9 of 1933                                                                                              |
| 7. Cotton Export Ordinance           | To make provision for the regulation of the quantity of cotton exported from the Presidency.                                    | " No. 20 of 1934.                                                                                            |
| 8. Sugar Quotas Ordinance            | To regulate the exportation and storage for exportation of sugar in accordance with the International Sugar Restriction Scheme. | " No. 16 of 1937 and<br>S.R. & O. No. 1 of 1938                                                              |
| 9. Exportation of Fruit Ordinance    | To make provision for the inspection of fruit and vegetables exported.                                                          | Ordinance No. 13 of 1938 (N.B. Not brought into operation at 31st December, 1938).                           |
| 10. Agricultural Small Holdings Act. | To provide security of tenure to occupants of small rented holdings.                                                            | L.I. Act 12 of 1939                                                                                          |

# LEGISLATION AFFECTING LABOUR.

| Measure.                  | Object.                                                                                                                                                                                                                                                           | Index of Legislation.                                                                                                                        |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Workmen's Compensation | To provide for the payment of compensation to workmen for injuries suffered in the course of their employment. Not applicable to agricultural labourers except in so far as they are employed in connection with an engine or machine worked by mechanical power. | L. I. Act 11 of 1937<br>Antigua Ordinance No. 10 of 1937<br>S.R. & O. No. 12 of 1938<br>S.R. & O. No. 21 of 1938<br>L. I. Act No. 21 of 1937 |
| 2. Labour (Minimum Wage)  | To empower the Governor to fix with the advice of the Executive Council a minimum rate of wage for any occupation for which he considers that the wages are unreasonably low.                                                                                     | Antigua Ordinance No. 12 of 1937.                                                                                                            |

# APPENDIX I.

## POSSIBILITY OF INCREASED FOOD PRODUCTION.

The frequency of serious droughts in Antigua has resulted in the agricultural system of the island being based almost entirely on the sugar crop, with cotton as the chief subsidiary industry.

In most years, however, there is also a considerable local production of certain farinaceous food crops—chiefly sweet potatoes, but also yams, eddoes and cassava.

In seasons of prolonged drought there is generally a marked shortage of these local ground provisions, while there is an excess in favourable years when great difficulty is experienced in disposing of sweet potatoes.

The large scale production of animal foodstuffs is limited by the lack of fodder in dry seasons and at times even by shortage of drinking water for stock.

The following table shows the more important foodstuffs imported into Antigua during the period 1934—1938.

| CHIEF IMPORTED FOODS.<br>1934—1938. |           |             |           |             |           |             |           |             |           |             |             |
|-------------------------------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|-------------|
| Article.                            | 1934.     |             | 1935.     |             | 1936.     |             | 1937.     |             | 1938.     |             | Value.<br>£ |
|                                     | Quantity. | Value.<br>£ | Quantity. | Value.<br>£ | Quantity. | Value.<br>£ | Quantity. | Value.<br>£ | Quantity. | Value.<br>£ |             |
| Biscuits, Bread & Cakes lb.         | 178,980   | 1,917       | 157,976   | 1,720       | 196,259   | 2,746       | 194,972   | 3,312       | 180,672   | 2,929       |             |
| Butter & butter substitute lb.      | 103,996   | 3,733       | 85,151    | 2,882       | 88,969    | 3,511       | 100,801   | 3,923       | 111,511   | 5,169       |             |
| Fish lb.                            | 884,136   | 6,367       | 556,880   | 6,163       | 742,107   | 6,601       | 802,269   | 7,608       | 897,712   | 9,034       |             |
| Corn lb.                            | 252,186   | 1,101       | 196,994   | 1,216       | 148,088   | 664         | 157,589   | 710         | 81,850    | 350         |             |
| Cornmeal bags.                      | 11,766    | 9,955       | 11,035    | 11,218      | 8,575     | 9,501       | 8,069     | 10,777      | 11,174    | 10,332      |             |
| Flour bags.                         | 16,353    | 16,218      | 17,162    | 19,159      | 19,640    | 18,334      | 16,075    | 23,087      | 16,537    | 19,751      |             |
| Lard & lard substitute lb.          | 117,900   | 1,936       | 87,877    | 2,184       | 121,444   | 2,394       | 137,910   | 2,818       | 141,901   | 2,794       |             |
| Meat lb.                            | 65,313    | 1,817       | 47,949    | 1,558       | 137,037   | 3,829       | 171,948   | 5,268       | 79,553    | 1,867       |             |
| Edible Oils                         | ...       | 1,579       | ...       | 2,418       | ...       | 2,866       | ...       | 4,369       | ...       | 3,771       |             |
| Rice lb.                            | 1,307,166 | 6,451       | 1,520,642 | 7,011       | 1,694,279 | 6,937       | 2,222,579 | 9,899       | 2,017,752 | 9,291       |             |

The most important items are wheaten flour, cornmeal, rice, fish, butter and butter substitutes, edible oils, lard and lard substitutes, and in 1938 the value of these articles amounted to £60,142.



The largest single item, wheaten flour (value £19,751), cannot be produced in the tropics and rice (value £9,291) cannot be grown under the conditions existing in Antigua.

The question of increased production of fish is not strictly within the scope of an agricultural report, but it may be mentioned that consideration has been given to this matter by the local Government, and some years ago a committee investigated the matter and reported.

With respect to the fatty foods (butter and butter substitutes, edible oils, lard and lard substitutes, valued in all at £11,734) production is largely dependent on an expansion of the livestock industry, which, as has already been indicated is limited by climatic conditions. An attempt has however been made to improve the stock position through the importation by the Peasant Agricultural Development Department of suitable breeding animals—the bulls being specially selected for a milk and beef strain.

As regards edible oils, consideration is being given to the local production of edible cotton seed oil, but it is doubtful if this could be manufactured economically in Antigua in view of the comparatively small cotton industry.

Maize growing and cornmeal production appear to be the most promising means of producing locally an important foodstuff now imported. Maize has been grown in Antigua for very many years, but only on a small scale and mainly as a catch crop on lands cultivated for sugar cane.

An unsuccessful attempt to encourage local manufacture of cornmeal was made in 1914, and a Government granary equipped with a kiln drying plant and a small mill for production of meal was operated spasmodically for some years. The plant was finally disposed of in 1925.

In 1938 the Peasant Agricultural Development Department leased and operated a small cornmeal mill erected by private individuals. 75 bags cornmeal—580 lb. coarse meal and 2,905 lb. chicken feed were produced. Peasants are being encouraged to plant corn and steps are being taken to provide a larger and modern plant, and it is hoped eventually to produce locally a considerable proportion of the meal consumed.

The Report of the Peasant Agricultural Development Department\* gives details of the development of the vegetable industry. Although the main aim is the export market, the marked increase in local production of better class vegetables has inevitably resulted in an increased supply for home consumption.

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\* Printed separately as a supplementary report.

## APPENDIX II.

### SUGAR CANE EXPERIMENTS.

#### VARIETAL EXPERIMENTS.

##### A. EXPERIMENTS WITH PLANT CANES

Varietal Trial—Greencastle Experiment Station.

Soil Type—Bendal Clay.

Manurial Treatment—7 tons Pen Manure per acre under the banks

1½ cwt. Sulphate of Ammonia—June 1937.

Planted 25 & 27/11/36.

Reaped 6/3/38.

| Rainfall.         |      |      |           | Average rainfall for similar period based on returns for ten years. |      |       |     |
|-------------------|------|------|-----------|---------------------------------------------------------------------|------|-------|-----|
| Dec. 1936         | .... | .... | 9.02 ins. | Dec.                                                                | .... | 4.42  | ins |
| 1937              | .... | .... | 56.98 "   | Jan.—Dec.                                                           | .... | 48.98 | "   |
| Jan.—Mar. 5, 1938 | .... | .... | 3.47 "    | Jan.—Feb.                                                           | .... | 4.40  | "   |
| Total             | .... | .... | 69.47 "   |                                                                     |      | 57.80 | "   |

Layout—12 Randomised Blocks. Plot area—1/53.8 acre.

| Variety.  |      |      |      | Yield of Cane Tons per acre. |      |      |  |
|-----------|------|------|------|------------------------------|------|------|--|
| M.42      | .... | .... | .... | ....                         | .... | 26.8 |  |
| F.C.916   | .... | .... | .... | ....                         | .... | 26.3 |  |
| B.H.10.12 | .... | .... | .... | ....                         | .... | 25.0 |  |
| B.726     | .... | .... | .... | ....                         | .... | 24.7 |  |

Differences in yield of canes exceeding 1.90 tons per acre might be due to chance less than once in 20 times.

M.42 has yielded significantly higher than B.726.

In this experiment all varieties germinated well.

Varietal Trial—Comfort Hall No. 9.

Soil Type—Fitches Clay.

Manurial Treatment—Nil.

Planted 13/11/36.

Reaped 10/2/38.

| Rainfall.         |      |      |            | Average rainfall for similar period based on returns for ten years. |      |      |            |
|-------------------|------|------|------------|---------------------------------------------------------------------|------|------|------------|
| Nov. & Dec. 1936  | .... | .... | 11.32 ins. | Nov. & Dec.                                                         | .... | .... | 10.25 ins. |
| 1937              | .... | .... | 38.11 "    | Jan.—Dec.                                                           | .... | .... | 39.59 "    |
| Jan.—Feb. 9, 1938 | .... | .... | 1.32 "     | Jan.                                                                | .... | .... | 1.99 "     |
| Total             | .... | .... | 50.75 "    | Total                                                               | .... | .... | 51.83 "    |

Layout—Two 5 × 5 Latin Squares.

Plot area—1/32.3 acre.

| Variety.       |      |      |      | Yield of Cane—Tons per acre. |      |      |  |
|----------------|------|------|------|------------------------------|------|------|--|
| B.2935         | .... | .... | .... | ....                         | .... | 29.7 |  |
| Ba.11569       | .... | .... | .... | ....                         | .... | 22.7 |  |
| P.O.J. 2727    | .... | .... | .... | ....                         | .... | 20.4 |  |
| Co.213         | .... | .... | .... | ....                         | .... | 20.2 |  |
| B.147 (B.4507) | .... | .... | .... | ....                         | .... | 16.9 |  |

Differences in yield of canes exceeding 2.64 tons per acre and 3.56 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

B.2935 has outyielded all other varieties and is the outstanding cane under the conditions of this experiment.

Germination was indifferent except in the case of B.2935 and it should be noted that B.11569 germinated less readily than either Co.213 or B.147, both of which varieties, however, proved inferior to it.

Varietal Trial—Blakes 11 E.  
Soil Type—Gunthorpe Clay  
Manurial Treatment—Nil.  
Planted 18/12/36.  
Reaped 3/3/38.

| Rainfall       |      |      |           | Average Rainfall for same period based on returns for ten years. |      |      |           |
|----------------|------|------|-----------|------------------------------------------------------------------|------|------|-----------|
| Dec. 1936      | .... | .... | 9.74 ins. | Dec. ....                                                        | .... | .... | 5.58 ins. |
| 1937           | .... | .... | 61.95 "   | Jan.—Dec.                                                        | .... | .... | 51.18 "   |
| Jan.—Feb. 1938 | .... | .... | 2.78 "    | Jan.—Feb.                                                        | .... | .... | 4.86 "    |
| Total          | .... | .... | 74.47 "   | Total                                                            | .... | .... | 61.62 "   |

Layout—Four 3 × 3 Latin Squares.  
Plot Area—1/32.8 acre.

| Variety   |      |      | Yield of Cane—Tons per acre |         |          |         |             |
|-----------|------|------|-----------------------------|---------|----------|---------|-------------|
|           |      |      | Sq. I.                      | Sq. II. | Sq. III. | Sq. IV. | All Squares |
| B.2935    | .... | .... | 32.10                       | 26.70   | 23.39    | 28.01   | 27.55       |
| Ba.11569  | .... | .... | 28.39                       | 26.96   | 25.46    | 22.65   | 25.87       |
| B.H.10.12 | .... | .... | 24.92                       | 23.37   | 19.94    | 19.03   | 21.81       |

Differences in yield of canes exceeding 1.61 and 2.35 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

In Squares I and IV the yield of B.2935 is significantly larger than that of Ba.11569, while in Square III the reverse is the case. Initial Germinations were—B.H.10.12 — 83%; B.2935 — 71%; Ba.11569 — 67%.

Varietal Trial—La Roches No. 3.  
Soil Type—Otto Clay.  
Manurial Treatment—Nil.  
Planted 25/11/36.  
Reaped 25/2/38.

| Rainfall           |      |      |           | Average rainfall for same period based on returns for ten years. |      |      |           |
|--------------------|------|------|-----------|------------------------------------------------------------------|------|------|-----------|
| Dec. 1936          | .... | .... | 7.52 ins. | Dec. ....                                                        | .... | .... | 4.44 ins. |
| 1937               | .... | .... | 50.16 "   | Jan.—Dec.                                                        | .... | .... | 43.25 "   |
| Jan.—Feb. 24, 1938 | .... | .... | 1.81 "    | Jan.—Feb.                                                        | .... | .... | 3.64 "    |
| Total              | .... | .... | 59.49 "   | Total                                                            | .... | .... | 51.33 "   |

Layout—Four 3 × 3 Latin Squares.  
Plot Area—1/23.1 acre.

| Variety.  |      |      |      |      | Yield of Cane—Tons per acre. |      |      |       |
|-----------|------|------|------|------|------------------------------|------|------|-------|
| Ba.11569  | .... | .... | .... | .... | ....                         | .... | .... | 28.44 |
| B.H.10.12 | .... | .... | .... | .... | ....                         | .... | .... | 25.98 |
| B.2935    | .... | .... | .... | .... | ....                         | .... | .... | 22.20 |

Differences in yield of canes exceeding 1.93 and 2.68 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively. Ba.11569 is the outstanding variety.



Initial germinations were all poor, viz. B.H.10.12—49%.; B.2935—44%, and Ba. 11569—24%. After the first supplying all germination counts were over 90%.

B. Experiments with Ratoons.

Varietal Trial—Gaynors, Elms No. 5.

Soil Type—Fitches Clay.

Manurial Treatment—25 tons Pen Manure per acre applied to the Plant Canes.

2 cwt. Sulphate of Ammonia per acre applied to the ratoons 5/10/37.

Planted 16/11/35.

Reaped as Plant Canes 17/2/37.

Reaped as 1st ratoons 13/4/38.

Rainfall as 1st ratoons 37.33 ins.

Layout—One 6 × 6 Latin Square. Plot size 1/30 acre.

YIELD OF CANES—TONS PER ACRE.

|                     | Plant<br>Canes | 1st<br>Ratoons | Total | Differ-<br>ence |
|---------------------|----------------|----------------|-------|-----------------|
| B.2935 ....         | 64.52          | 31.31          | 95.83 | ....            |
| Ba.11569 ....       | 56.06          | 29.39          | 85.45 | 10.38           |
| P.O.J. 2878 ....    | 56.67          | 27.85          | 84.52 | 11.31           |
| B.H.10.12 ....      | 55.35          | 27.21          | 82.56 | 13.27           |
| B.726 ....          | 53.71          | 26.62          | 80.33 | 15.50           |
| B.147 (B.4507) .... | 42.24          | 25.72          | 67.97 | 27.87           |

Differences in yield of Plant canes exceeding 5.72 tons and 7.80 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

Differences in yield of first ratoons exceeding 2.02 tons and 2.76 tons per acre might be due to chance less than once in 20 times, and once in 100 times respectively.

B.2935 is the outstanding variety.

Varietal Trial—High Point—Nibbs No. 5.

Soil Type—Fitches Clay.

Manurial Treatment—25 tons Pen Manure per acre applied to the Plant Canes.

Manurial treatment of ratoons — Nil.

Planted 16/10/35 (B.147E) and 23/11/35.

Reaped as Plant Canes 5/4/37.

Reaped as 1st Ratoons 15/2/38.

Rainfall as Plant Canes 65.62 ins.

Rainfall as 1st Ratoons 27.22 ins.

Layout—One 6 x 6 Latin Square. Plot size—1/31 acre.

YIELD OF CANES—TONS PER ACRE.

| Variety.            | Plant<br>Canes. | 1st<br>Ratoons. | Total. | Difference. |
|---------------------|-----------------|-----------------|--------|-------------|
| B.2935 ....         | 49.63           | 15.50           | 65.12  |             |
| Ba.11569 ....       | 46.02           | 14.49           | 60.50  | 4.62        |
| B.891 ....          | 41.79           | 9.71            | 51.49  | 13.63       |
| B.147E (B.4507) ... | 37.29           | 13.61           | 50.90  | 14.22       |
| P.O.J.2878 ....     | 37.44           | 11.72           | 49.15  | 15.97       |
| B.147 (B.4507) .... | 34.33           | 12.61           | 46.93  | 18.19       |

Differences in yield of Plant Canes exceeding 3.34 tons and 4.55 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

Differences in yield of first ratoons exceeding 1.46 tons and 1.99 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

B.2935 is the outstanding variety.

Varietal Trial—Yeamans No. 3.

Soil Type—Transition between Fitches Clay and Calcareous Gunthorpe Clay.

Manurial Treatment—Plant Cane—20 tons Pen Manure per acre 1st Ratoons Sulphate of Ammonia

Planted 28/11/35.

Reaped as Plant Canes 16/3/37

Reaped as 1st ratoons 1/3/38

Rainfall as Plant Canes 67.76. Rainfall as 1st Ratoons. 35.46 ins.

Layout—One 6 x 6 Latin Square. Plot size—1/28.4 acre.

YIELD OF CANES—TONS PER ACRE.

| Variety.       | Plant Canes. | 1st Ratoons. | Total. | Difference |
|----------------|--------------|--------------|--------|------------|
| Ba.11569 ....  | 45.07        | 23.38        | 68.45  |            |
| P.O.J. 2878 .. | 40.26        | 21.78        | 62.04  | 6.41       |
| B.726 ....     | 44.35        | 17.11        | 61.46  | 6.99       |
| B.2935 ....    | 47.17        | 12.00        | 59.17  | 9.28       |
| B.H.10.12 .... | 42.32        | 14.43        | 56.75  | 11.70      |
| B.891 ....     | 41.87        | 10.67        | 52.54  | 15.91      |

Differences in yield of Plant Canes exceeding 3.88 tons and 5.29 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

Differences in yield of ratoons exceeding 3.09 tons and 4.21 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

Ba.11569 is the outstanding variety. B.2935 did well as a Plant Cane but failed as a ratoon on this heavy field which had been cross-holed.

Varietal Trial—Jolly Hill, Spring Piece.

Soil Type—Blubber Valley.

Manurial Treatment—Plant Cane—Nil.

1st Ratoons—2 cwt. Sulphate of Ammonia per acre.

Planted 9/11/35.

Reaped as Plant Canes 25/4/37.

Reaped as 1st Ratoons 2/5/38.

Rainfall as Plant Canes 86.53 ins.

Rainfall as 1st Ratoons 40.00 ins.

Layout—Two 5 x 5 Latin Squares. Plot size 1/29 acre.

YIELD OF CANES—TONS PER ACRE.

| Variety.         | Plant Canes. | 1st Ratoons. | Total. | Difference. |
|------------------|--------------|--------------|--------|-------------|
| P.O.J. 2878 .... | 43.44        | 24.01        | 67.45  |             |
| Ba.11569 ....    | 41.50        | 24.10        | 65.60  | 1.85        |
| B.H.10.12 ....   | 40.17        | 19.53        | 59.70  | 7.75        |
| B.2935 ....      | 43.29        | 15.45        | 58.74  | 8.71        |
| B.726 ....       | 40.56        | 17.15        | 57.71  | 9.74        |

Differences in yield of Plant Canes exceeding 3.51 tons and 4.74 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

Differences in yield of first Ratoons exceeding 3.22 tons and 4.34 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

P.O.J. 2878 and Ba.11569 are the outstanding varieties. B.2935 which yielded well as a Plant Cane failed as a first Ratoon.

## MANURIAL EXPERIMENTS.

### A. EXPERIMENTS INCLUDING ORGANIC MANURES.

#### I. *Experiments with Pen Manure versus Sulphate of Ammonia and Pen Manure and a complete inorganic fertilizer.*

Estate — Pares and Cochranes — Field No. 10 Cochranes.

Soil Type—Fitches Clay—CaCo.<sub>3</sub>=13%.

Variety—B.H.10.12—Plant Cane 1936, 1st Ratoons 1937, 2nd Ratoons 1938.

Planted 4/1/35.

Reaped as Plant Cane 26/2/36.

Reaped as 1st Ratoon 16/3/37.

Reaped as 2nd Ratoon 24/3/38.

Rainfall as Plant Cane 38 ins.

Rainfall as 1st Ratoons 69 ins.

Rainfall as 2nd Ratoons 34 ins.

Layout—Two 5 × 5 Latin Squares. Plot area—1/40 acre.

| Manurial Treatment<br>per acre as Plant<br>Cane. | Yield of Canes—Tons per acre. |                |                |        |       |
|--------------------------------------------------|-------------------------------|----------------|----------------|--------|-------|
|                                                  | Plant<br>Cane.                | 1st<br>Ratoon. | 2nd<br>Ratoon. | Total. | Gain. |
| Nil.                                             | 26.21                         | 16.64          | 10.56          | 53.41  |       |
| 12 tons Pen Manure<br>22/12/34 ....              | 29.35                         | 18.21          | 10.64          | 58.20  | 4.79  |
| 24 tons Pen Manure<br>22/12/34 ....              | 31.38                         | 21.93          | 11.64          | 64.95  | 11.54 |
| 36 tons Pen Manure<br>22/12/34 ....              | 31.53                         | 22.80          | 12.26          | 66.59  | 13.18 |
| 2 cwt. S. A. 29/5/35)                            | 25.89                         | 16.23          | 9.99           | 52.11  | 1.30  |
| 2 cwt. S.A. 9/8/35(                              |                               |                |                |        |       |

The immediate and residual effects of treatment with Pen Manure are statistically significant (S.D. for 2nd Ratoons is 1.31 — P. = 0.05).

Treatment with Sulphate of Ammonia has had no beneficial, immediate or residual effect on yield.

Greencastle Experiment Station—Permanent Manurial Experiment.

Soil Type—Bendal Clay.

Variety—B.H.10.12.

Planted—6/1/37.

Reaped as Plant Cane—4/4/38.

Rainfall (15 months)—43 ins.

Layout—One 4 x 4 Latin Square with two replicates in each row and in each column.

Plot area—1/48.5 acre.

| Manurial Treatment per acre.             |      |      |      | Yield of Canes.<br>—Tons per acre. |
|------------------------------------------|------|------|------|------------------------------------|
| 2 cwt. S.A.—2 cwt. Super—2 cwt. Sulphate |      |      |      |                                    |
| of Potash                                | .... | .... | .... | 42.38                              |
| 15 tons Pen Manure                       | .... | .... | .... | 43.30                              |
| Difference                               | .... | .... | .... | 0.92                               |



The difference of 0.92 tons per acre in favour of Pen Manure is not statistically significant.

It is intended that this is to be a permanent experiment for the comparison of Pen Manure with a complete inorganic, the original "Pen Manure" and "inorganic" plots will receive pen manure and an inorganic mixture respectively at each period of replanting.

*II. Experiments with Sulphate of Ammonia, Superphosphate and Sulphate of Potash alone and in various combinations both in the presence and absence of pen manure.*

Estate—Long Lane Field No. 9.

Soil Type—Fitches Clay.  $\text{CaCo}_3 = 30.9\%$ .

Variety—B.147 (B.4507).

Planted 17/10/35.

Reaped as Plant Canes 13/2/37.

Reaped as 1st Ratoons 11/10/38.

Rainfall as Plant Canes (16 months)—86 ins.

Rainfall as 1st Ratoons (14 months)—34 ins.

Layout—Four randomised blocks of 8 treatments with Pen Manured half plots as Plant Canes.

Six randomised blocks of 8 treatments with pen manured half plots as first ratoons.

Plot area—1/42.5 acre.

| Manurial Treatment per acre as Plant Canes.     | Yield of Cane Tons per acre as Plant Canes. |                                | Manurial Treatment per acre as 1st ratoons. | Yield of Cane Tons per acre as 1st ratoons. |                           |
|-------------------------------------------------|---------------------------------------------|--------------------------------|---------------------------------------------|---------------------------------------------|---------------------------|
|                                                 | No Pen Manure.                              | 12.5 tons Pen manure per acre. |                                             | No Pen Manure.                              | Pen manure as Plant Cane. |
| Nil ....                                        | 36.99                                       | 43.35                          | Nil.                                        | 23.15                                       | 24.49                     |
| N <sub>2</sub> ....                             | 40.46                                       | 45.64                          | N.                                          | 23.88                                       | 24.60                     |
| P. ....                                         | 42.63                                       | 39.39                          | P.                                          | 24.19                                       | 25.59                     |
| K. ....                                         | 37.67                                       | 40.31                          | K.                                          | 22.14                                       | 21.86                     |
| N <sub>2</sub> P. ....                          | 38.79                                       | 39.69                          | NP.                                         | 23.62                                       | 25.03                     |
| N <sub>2</sub> K ....                           | 42.32                                       | 42.86                          | N K.                                        | 24.48                                       | 26.83                     |
| PK ....                                         | 40.56                                       | 44.48                          | PK.                                         | 24.67                                       | 25.39                     |
| N <sub>2</sub> PK. ....                         | 43.65                                       | 46.81                          | NPK.                                        | 26.31                                       | 27.26                     |
| Means of Plots with and without Pen Manure .... | 40.38                                       | 42.81                          |                                             | 24.05                                       | 25.13                     |

The immediate and residual gains from Pen Manure are statistically significant.

The gains from complete inorganic manure are statistically significant and are greater than those produced by pen manure alone.

Explanation of Treatments:

N. = 2 cwt. Sulphate of Ammonia per acre.

N<sub>2</sub> = 4 cwt. Sulphate of Ammonia per acre.

P. = 2 cwt. Superphosphate per acre.

K. = 2 cwt. Sulphate of Potash per acre.

Estate—Ffryes Field No. 16.

Soil Type—Transition between Fitches Clay and calcareous Gunthorpe Clay.  $\text{CaCo}_3 = 20.19\%$ .

Variety—B.H.10.12.

Planted 21/11/35.

Reaped as Plant Cane 22/3/37.

Reaped as 1st Ratoon 2/4/38.

Rainfall as Plant Canes (16 months)—73 ins.

Rainfall as 1st Ratoons (12 months) — 37 ins.

Layout—6 Randomised blocks of 8 treatments with Pen manured half plots.  
Plot area—1/32 acre.

| Manurial Treatment per acre as plant cane.<br>Inorganics. | Yield of cane<br>Tons per acre as<br>plant cane. |                                    | Manurial Treatment per acre as<br>1st ratoons.<br>Inorganics. | Yield of cane<br>Tons per acre as<br>1st ratoons. |                              |
|-----------------------------------------------------------|--------------------------------------------------|------------------------------------|---------------------------------------------------------------|---------------------------------------------------|------------------------------|
|                                                           | No Pen<br>Manure.                                | 15 tons pen<br>manure<br>per acre. |                                                               | No Pen<br>Manure.                                 | Pen<br>manure<br>as P. Cane. |
| Nil                                                       | 48.05                                            | 50.82                              | Nil.                                                          | 14.93                                             | 16.69                        |
| N.                                                        | 50.52                                            | 56.34                              | N.                                                            | 19.03                                             | 20.50                        |
| P.                                                        | 49.07                                            | 53.23                              | P.                                                            | 13.60                                             | 16.62                        |
| K.                                                        | 47.39                                            | 55.19                              | K.                                                            | 14.67                                             | 17.49                        |
| N <sub>2</sub> P.                                         | 53.30                                            | 61.27                              | NP.                                                           | 21.41                                             | 21.72                        |
| N <sub>2</sub> K.                                         | 54.80                                            | 62.87                              | NK.                                                           | 22.67                                             | 22.57                        |
| PK.                                                       | 48.32                                            | 52.80                              | PK.                                                           | 15.46                                             | 16.01                        |
| N <sub>2</sub> PK.                                        | 55.83                                            | 61.74                              | NPK.                                                          | 20.90                                             | 21.90                        |
| Means of Plots<br>with and with-<br>out Pen Manure        | 50.90                                            | 56.78                              |                                                               | 19.18                                             | 17.83                        |
| Means of Plots<br>with and with-<br>out Nitrogen ....     |                                                  |                                    |                                                               |                                                   |                              |
| No. N.                                                    | 48.20                                            | 53.00                              | No. N.                                                        | 14.66                                             | 16.70                        |
| N <sub>2</sub>                                            | 53.61                                            | 60.55                              | N.                                                            | 21.00                                             | 21.67                        |

The immediate and residual gains from pen manure are both statistically significant.

The average gains in yield from Nitrogen are statistically significant. This gain in the case of the ratoons is reduced significantly in the presence of pen manure. The residual effects of pen manure is also reduced in the presence of Nitrogen.

The gains from the complete inorganic manure are statistically significant and exceed those produced by pen manure alone.

Explanation of Treatments.

N. = 2 cwt. S. A. per acre. N<sub>2</sub> = 4 cwt. S. A. per acre.

P. = 2 cwt. Superphosphate per acre.

K. = 2 cwt. Sulphate of Potash per acre.

#### B. EXPERIMENTS WITH INORGANIC FERTILISERS ONLY.

##### I. Experiments with special reference to Nitrogen.

Estate—Sandersons—Field Upper Freemans No. 8.

Soil Type—Gunthorpe Clay. CaCO<sub>3</sub> = 1.18%.

Variety—B.H.10.12.

Planted 14/11/35.

Reaped as Plant Canes 23/3/37.

Reaped as 1st Ratoons 20/3/38.

Rainfall as Plant Canes (16½ months) 87 ins.

Rainfall as 1st Ratoons (11¾ months) 41 „

Layout—Three 4 x 4 Latin Squares with Nitrogen half plots.

Plot area—1/31.6 acre.

| Manurial Treatment per acre as plant cane.   | Yield of Plant Cane.<br>Tons per acre. |                         | Manurial Treatment per acre as 1st ratoons.  | Yield of 1st Ratoons<br>Tons per acre. |                        |
|----------------------------------------------|----------------------------------------|-------------------------|----------------------------------------------|----------------------------------------|------------------------|
|                                              | No Nitro-gen                           | 4 cwt. S.A. to P. Canes |                                              | No. N.                                 | 2 cwt. S.A. to ratoons |
| Nil.                                         | 25.50                                  | 27.88                   | Nil.                                         | 7.53                                   | 7.79                   |
| 2 cwt. Super ....                            | 28.95                                  | 33.67                   | 2 cwt. Super ....                            | 10.15                                  | 13.42                  |
| 2 cwt. Sulphate of Potash ....               | 26.74                                  | 28.61                   | 2 cwt. Sulphate of Potash ....               | 7.96                                   | 7.93                   |
| 2 cwt. Super; 2 cwt. Sulphate of Potash .... | 30.17                                  | 36.57                   | 2 cwt. Super; 2 cwt. Sulphate of Potash .... | 9.75                                   | 14.34                  |
| Mean yields for plots with and without S.A.  | 27.77                                  | 31.46                   |                                              | 8.85                                   | 10.87                  |
| Plots without Super ....                     | 25.97                                  | 28.25                   |                                              | 7.74                                   | 7.86                   |
| Plots with Super ....                        | 29.56                                  | 34.67                   |                                              | 9.55                                   | 13.88                  |

The average gains from Nitrogen and from Phosphate both with plants and ratoons might be due to chance far less than once in 100 times. In both cases the gain from Nitrogen is significantly larger in the presence than in the absence of Phosphate and vice versa.

Estate—Long Lane. Field 16 Acre.

Soil Type—Fitches Clay.  $\text{CaCO}_3$ .

Variety—B.147 (B.4507).

Planted 23/10/36.

Reaped 6/4/38.

Rainfall as Plant Canes (17½ months)—64 ins.

Layout—Three 4 × 4 Latin Squares with late Nitrogen half plots.

Plot area—1/34.9 acre.

| Manurial treatment per acre in addition to basal Super and Sulphate of Potash—<br>2 cwt. each 11/12/36. | No late<br>S. A. | 2 cwt.<br>S. A.<br>5/5/37. |
|---------------------------------------------------------------------------------------------------------|------------------|----------------------------|
|---------------------------------------------------------------------------------------------------------|------------------|----------------------------|

|                                         |       |       |
|-----------------------------------------|-------|-------|
| Nil                                     | 25.40 | 25.95 |
| 1 cwt. S. A. 11/12/36                   | 23.74 | 25.03 |
| 2 " " " "                               | 26.94 | 25.15 |
| 3 " " " "                               | 26.67 | 26.43 |
| Mean yields with and without late S. A. | 25.69 | 25.64 |
| Mean yield—Nil & 1 cwt. S. A. early.    | 25.04 |       |
| Mean yield—2 & 3 cwt. S. A. early.      | 26.30 |       |

The experimental area proved to have very considerable soil variation and the beneficial effect of early Nitrogen on yield varied from square to square. The average yield (26.30 tons of cane) on the plots treated with early dressings of 2 cwt and 3 cwt Sulphate of Ammonia is significantly larger than the average yield (25.04 tons cane) on the plots treated with early dressings of Nil and 1 cwt Sulphate of Ammonia.

The effect of later nitrogen on yield is statistically not significant.

Estate—Belvidere. George Byam's No. 12.

Soil Type—Bendal Clay.

Variety—B.H.10.12.

Planted. 3/12/36.

Reaped 6/3/38.

Rainfall as Plant Canes (15 months)—61 ins.

Layout—Three 4 × 4 Latin Squares with early Nitrogen half plots.

Plot area—1/33 acre.



| Manurial Treatment per acre in addition to basal Super and Sulphate of Potash—<br>2 cwt. each 9/2/37. | No early<br>S. A. | 2 cwt.<br>S. A.<br>9/2/37. | All Plots. |
|-------------------------------------------------------------------------------------------------------|-------------------|----------------------------|------------|
| Nil                                                                                                   | 24.52             | 25.36                      | 24.94      |
| 1 cwt. S. A. 20/5/37                                                                                  | 25.64             | 27.95                      | 26.80      |
| 2 " " " "                                                                                             | 26.47             | 27.90                      | 27.19      |
| 3 " " " "                                                                                             | 27.72             | 28.60                      | 28.16      |
| Mean yields with and without early S. A.                                                              | 26.09             | 27.45                      |            |

The average gain in yield of 1.36 tons cane per acre resulting from early application of 2 cwt Sulphate of Ammonia might be due to chance less than once in 100 times.

Average gains in yield (all plots) exceeding 1.40 tons cane to the acre resulting from late applications of Sulphate of Ammonia might be due to chance less than once in 20 times.

## II. Experiments with special reference to Phosphate.

Estate — Millars — Field No. 1.

Soil Type—Fitches Clay.  $\text{CaCo}_3 = 28.02\%$ .

Variety—P.O.J.2878.

Planted 5/11/35.

Reaped as Plant Canes 6/3/37.

Reaped as 1st Ratoons 21/3/38.

Rainfall as Plant canes (16 months) 80 ins.

Rainfall as 1st Ratoons ( $12\frac{1}{2}$  months) 37 ins.

Layout—one 6 x 6 Latin Square with phosphate half plots.

Plot Area—1/35.9 acre.

| Manurial Treatment per acre as Plant Cane.  | Yield of Cane Tons per acre as Plant Cane. |                        | Manurial Treatment per acre as 1st Ratoons. | Yield of Cane Tons per acre as 1st Ratoons. |                        |
|---------------------------------------------|--------------------------------------------|------------------------|---------------------------------------------|---------------------------------------------|------------------------|
|                                             | No Phosphate.                              | 2 cwt. Super per acre. |                                             | No Phosphate.                               | 2 cwt. Super per acre. |
| Nil ....                                    | 43.46                                      | 45.76                  | Nil ....                                    | 14.31                                       | 14.34                  |
| K. ....                                     | 44.61                                      | 44.95                  | K. ....                                     | 14.70                                       | 15.25                  |
| N. ....                                     | 47.84                                      | 47.42                  | N. ....                                     | 18.85                                       | 19.32                  |
| NK. ....                                    | 47.40                                      | 48.69                  | NK. ....                                    | 18.75                                       | 18.97                  |
| N <sub>2</sub> ....                         | 50.27                                      | 50.55                  | N. ....                                     | 18.82                                       | 19.03                  |
| N <sub>2</sub> K ....                       | 49.56                                      | 50.64                  | NK. ....                                    | 19.48                                       | 19.36                  |
| Mean Yields of plots with and without Super | 47.19                                      | 48.00                  |                                             | 17.49                                       | 17.71                  |
| No Nitrogen ....                            | 44.70                                      |                        | No Nitrogen ....                            | 14.61                                       |                        |
| N <sub>1</sub> ....                         | 47.84                                      |                        | Nitrogen ....                               | 19.09                                       |                        |
| N <sub>2</sub> ....                         | 50.26                                      |                        |                                             |                                             |                        |

Both with the Plant Canes and with the ratoons Nitrogen has produced statistically significant gains in yield.

The effects of phosphate and potash are not statistically significant.

Estate—Diamond Field 7.

Soil Type—Fitches Clay.  $\text{CaCo}_3 = 7.29\%$ .

Variety—B.H.10.12.

Planted 19/11/35.

Reaped as Plant Canes 12/3/37.

Reaped as 1st Ratoons 29/3/38.

Rainfall as Plant Canes ( $15\frac{3}{4}$  months) 80 ins.

Rainfall as 1st ratoons ( $12\frac{1}{2}$  months) 41 ins.

Layout—One 6 x 6 Latin Square with Phosphate half plots.

Plot area—1/33.2 acre.

| Manurial Treatment per acre as Plant Cane.  | Yield of Cane Tons per acre as Plant Cane. |                        | Manurial Treatment per acre as 1st Ratoons. | Yield of Cane Tons per acre as 1st Ratoons. |                        |
|---------------------------------------------|--------------------------------------------|------------------------|---------------------------------------------|---------------------------------------------|------------------------|
|                                             | No Phosphate.                              | 2 cwt. Super per acre. |                                             | No Phosphate.                               | 2 cwt. Super per acre. |
| Nil                                         | 43.02                                      | 44.84                  | Nil                                         | 11.61                                       | 14.34                  |
| K.                                          | 44.41                                      | 45.93                  | K.                                          | 12.55                                       | 13.88                  |
| N.                                          | 44.49                                      | 46.06                  | N.                                          | 14.45                                       | 16.06                  |
| NK.                                         | 43.01                                      | 46.04                  | NK.                                         | 13.85                                       | 17.58                  |
| N <sub>2</sub>                              | 42.95                                      | 46.64                  | N.                                          | 12.95                                       | 15.57                  |
| N <sub>2</sub> K                            | 43.27                                      | 46.87                  | NK.                                         | 14.80                                       | 17.46                  |
| Mean Yields of plots with and without Super | 43.53                                      | 46.06                  |                                             | 13.37                                       | 15.73                  |
| No Nitrogen                                 | 44.55                                      |                        | No Nitrogen                                 | 12.98                                       |                        |
| N <sub>1</sub>                              | 44.91                                      |                        | N <sub>1</sub>                              | 15.35                                       |                        |
| N <sub>2</sub>                              | 44.94                                      |                        |                                             |                                             |                        |

The gains from phosphate (plant canes and ratoons) are highly significant and so is the gain in yield of first ratoons resulting from 2 cwt. S.A. per acre.

Estate—Bodkins. Field 2.

Soil Type—Gunthorpe Clay.  $\text{CaCo}_3 = 6.77\%$ .

Planted—19/12/35.

Variety—Ba.11569.

Reaped as Plant Canes—28/5/37.

Reaped as 1st ratoons 29/4/38.

Rainfall as Plant Canes ( $17\frac{1}{2}$  months)—83 ins.

Rainfall as 1st ratoons (11 months)—41 ins.

Layout—One 6 x 6 Latin Square with Phosphate Half Plots.

Plot area. 1/35 acre.

| Manurial Treatment per acre as Plant Cane. | Yield of Cane Tons per acre as Plant Cane. |                        | Manurial Treatment per acre as 1st Ratoons. | Yield of Cane Tons per acre as 1st Ratoons. |                        |
|--------------------------------------------|--------------------------------------------|------------------------|---------------------------------------------|---------------------------------------------|------------------------|
|                                            | No Phosphate.                              | 2 cwt. Super per acre. |                                             | No Phosphate.                               | 2 cwt. Super per acre. |
| Nil                                        | 40.74                                      | 40.67                  | Nil                                         | 17.17                                       | 17.10                  |
| K.                                         | 41.61                                      | 41.15                  | K.                                          | 17.23                                       | 16.02                  |
| N.                                         | 44.22                                      | 43.66                  | N.                                          | 22.45                                       | 22.88                  |
| NK.                                        | 43.44                                      | 45.46                  | NK.                                         | 21.83                                       | 22.32                  |
| N <sub>2</sub>                             | 45.38                                      | 45.11                  | N.                                          | 21.43                                       | 26.54                  |
| N <sub>2</sub> K                           | 45.08                                      | 44.69                  | NK                                          | 22.45                                       | 24.65                  |
| No Nitrogen                                | 41.05                                      |                        | No Nitrogen                                 | 17.20                                       | 16.56                  |
| N <sub>1</sub>                             | 44.25                                      |                        | N.                                          | 22.05                                       | 24.09                  |
| N <sub>2</sub>                             | 45.07                                      |                        |                                             |                                             |                        |

The average gains in yield from Nitrogen both with plant canes and with ratoons are statistically significant.

The gain from phosphate applied to ratoons is significant on the plots which received early and late nitrogen as plant cane and nitrogen as ratoons.

Explanation of treatments in the above three experiments:

K=2 cwt. Sulphate of Potash per acre.

N=2 cwt. Sulphate of Ammonia per acre.

N<sub>2</sub>=4 cwt. Sulphate of Ammonia per acre (2 cwt. early, 2 cwt. late).

### III. Experiments with basal Nitrogen, with and without Phosphate and Potash.

Estate—Langfords. Field No. 26.

Soil Type—Fitches Clay. CaCO<sub>3</sub>—40.0%

Variety—Ba.11569.

Planted—26/11/36.

Reaped as Plant Canes 22/2/38.

Rainfall as Plant Canes (15 months)—50 ins.

Layout—Four 4 x 4 Latin Squares.

Plot Area—1/20.2 acre.

| Manurial treatment per Acre in addition to Basal Nitrogen { 2 cwt. S. A. early<br>2 cwt. S. A. late. |        | Yield of Canes<br>Tons per Acre. |
|------------------------------------------------------------------------------------------------------|--------|----------------------------------|
| Nil                                                                                                  |        | 27.54                            |
| 1 cwt. Super.                                                                                        | 3/2/37 | 28.38                            |
| 1 cwt. Sulphate of Potash                                                                            | 3/2/37 | 28.52                            |
| 1 cwt. Super and 1 cwt. Sulphate of Potash                                                           | 3/2/37 | 28.50                            |

The average gain in yield from potash is 0.55 tons per acre and the average gain from phosphate is 0.41 tons per acre.

Neither of these gains is statistically significant.

Estate. Winthorpes. Field No. 11.

Soil Type—Fitches Clay. CaCO<sub>3</sub>—20.2%

Variety. Ba.11569.

Planted. 19/11/36.

Reaped as Plant Canes 16/2/38.

Rainfall as Plant Canes (15 months). 48 ins.

Layout. Two 5 x 5 Latin Squares with potash half plots.

Plot Area. 1/30 Acre.

| Manurial Treatment per Acre in addition to Basal Nitrogen—{ 2 cwt. 5/1/37<br>2 cwt. 9/5/37 |        | Yield of plant cane<br>tons per acre. |                                     |
|--------------------------------------------------------------------------------------------|--------|---------------------------------------|-------------------------------------|
|                                                                                            |        | No Potash                             | 2 cwt. Potash<br>per Acre<br>6/1/37 |
| Nil                                                                                        |        | 19.31                                 | 20.11                               |
| 1 cwt. Super (20 replicates)                                                               | 6/1/37 | 21.07                                 | 21.27                               |
| 2 cwt. Super (20 replicates)                                                               | 6/1/37 | 21.12                                 | 20.40                               |

The small differences in yield cannot be established as statistically significant. The experimental area proved to be very variable.

Estate—Ottos. Field No. 25.

Soil Type Otto Clay.

Variety. B.H.10.12.

Planted 3/12/36.

Reaped as Plant Canes—13/3/38.

Rainfall as Plant Canes (15½ months)—71 ins.

Layout—Two 6 x 6 Latin Squares with Potash half plots.

Plot Area—1/37.7 acre.



| Manurial Treatment per acre in addition to Basal Nitrogen — 2 cwt. 15/2/37<br>2 cwt. 26/5/37 | Yield of Plant Cane<br>Tons per acre. |                                          |
|----------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------|
|                                                                                              | No Potash                             | 2 cwt.<br>Potash per<br>acre<br>15/2/37. |
| Nil (24 replicates)                                                                          | 26.68                                 | 29.16                                    |
| 1 cwt. Super 15/2/37                                                                         | 27.00                                 | 29.39                                    |
| 2 cwt. Super 15/2/37                                                                         | 28.29                                 | 29.44                                    |
| 1 cwt. Super 26/5/37                                                                         | 27.39                                 | 29.00                                    |
| 2 cwt. Super 26/5/37                                                                         | 27.13                                 | 29.12                                    |
| Mean yield of Plots with and without Potash.                                                 | 27.20                                 | 29.21                                    |

The average gain of 2.01 tons cane per acre from Potash is highly significant.

The action of superphosphate differs significantly in the two squares. In one square the average gain of 1.11 tons per acre is significant.

*IV. Residual effect of Sulphate of Ammonia applied to Plant Canes treated with basal Pen Manure, and effect of Sulphate of Ammonia applied to the 2nd ratoons.*

Estate—Greencastle Experiment Station.

Soil Type—Bendal Clay.

Variety—B.H.10.12.

Planted 1/11/34.

Reaped as Plant Canes 25/3/36.

Reaped as 1st ratoons 12/5/37.

Reaped as 2nd Ratoons 10/3/38.

Rainfall as Plant Canes 75 ins.

Rainfall as 1st ratoons 89 ins.

Rainfall as 2nd ratoons 43 ins.

Layout—Two 5 × 5 Latin Squares with Nitrogen half plots as 2nd ratoons.

Half Plot Area—1/48.6 acre.

| Treatment with S.A. per acre<br>as Plant Cane.                            |            | Yield of cane — Tons per acre. |             |             |             |
|---------------------------------------------------------------------------|------------|--------------------------------|-------------|-------------|-------------|
|                                                                           |            | P. Canes.                      | 1st ratoons | 2nd Ratoons |             |
| Dec. 1934.                                                                | Aug. 1935. |                                |             | No S.A.     | 2 cwt. S.A. |
| Nil.                                                                      | Nil.       | 32.58                          | 30.40       | 17.59       | 21.75       |
| Nil.                                                                      | 2 cwt.     | 33.51                          | 31.80       | 17.66       | 21.68       |
| Nil.                                                                      | 3 cwt.     | 33.21                          | 32.70       | 18.09       | 20.97       |
| 2 cwt.                                                                    | 2 cwt.     | 34.06                          | 33.60       | 19.33       | 22.31       |
| 2 cwt.                                                                    | 3 cwt.     | 33.78                          | 34.80       | 18.90       | 21.38       |
| Average yield of Nitrogen<br>and No Nitrogen Plots<br>as 2nd ratoons .... |            |                                |             | 18.31       | 21.62       |

The average gain in yield of 2nd Ratoons of 3.31 tons cane per acre is highly significant.

C. EXPERIMENTS WITH TRASH MULCH.

*I. Residual effects of Trash mulching applied with and without Sulphate of Ammonia to the Plant cane crop.*

Estate—Collins. Field—Elliotts No. 11.

Soil Type—Fitches Clay. CaCo<sub>3</sub> = 19.44%.

Variety—B.147 (B.4507).  
 Planted 18/10/34.  
 Mulched—11/1/35.  
 Reaped as Plant Canes 22/4/36.  
 Reaped as 1st Ratoons 8/6/37.  
 Reaped as 2nd Ratoons 14/4/38.  
 Rainfall as Plant Canes 61 ins.  
 Rainfall as 1st ratoons 67 ins.  
 Rainfall as 2nd Ratoons 28 ins.  
 Layout—One 6 x 6 Latin Square. Plot area—1/23.5 acre.

| Cultural and Manurial Treatment<br>per acre as Plant Canes. | Yield of canes—Tons per acre. |             |              |
|-------------------------------------------------------------|-------------------------------|-------------|--------------|
|                                                             | P. Canes.                     | 1st ratoons | 2nd Ratoons. |
| Mulched. No S.A. ....                                       | 34.71                         | 26.51       | 13.51        |
| Mulched. 2 cwt. S.A. ....                                   | 33.77                         | 26.44       | 13.08        |
| Mulched. 4 cwt. S.A. ....                                   | 35.15                         | 27.24       | 12.53        |
| No mulch. No S.A. ....                                      | 30.00                         | 28.11       | 13.72        |
| No Mulch. 2 cwt. S.A. ....                                  | 30.90                         | 27.96       | 14.14        |
| No Mulch. 4 cwt. S.A. ....                                  | 29.53                         | 28.58       | 13.55        |
| Mean yield of No Mulch plots                                | 30.14                         | 28.23       | 13.80        |
| Mean Yield of Mulched plots ....                            | 34.54                         | 26.73       | 13.04        |

The immediate gain from Trash mulching is statistically significant. The first residual loss from trash mulching approaches statistical significance. The average second residual loss from the mulch might be due to chance about once in 20 times.

Estate—Coconut Hall. Field No. 11.  
 Soil Type—Fitches Clay.  $\text{CaCo}_3 = 16.72\%$ .  
 Variety—B.147 (B.4507).  
 Planted—10/11/34.  
 Mulched—12/1/35.  
 Reaped as Plant Canes—30/4/36.  
 Reaped as 1st ratoons—16/6/37.  
 Reaped as 2nd ratoons—22/4/38.  
 Rainfall as Plant Canes—53 ins. ( $17\frac{3}{4}$  months).  
 Rainfall as 1st ratoons—76 ins. ( $13\frac{1}{2}$  months).  
 Rainfall as 2nd ratoons—30 ins. ( $10\frac{1}{4}$  months).  
 Layout—One 6 x 6 Latin Square. Plot area—1/21.7 acre.

| Cultural and Manurial Treatment<br>per acre as Plant Canes. | Yield of canes—Tons per acre. |             |              |
|-------------------------------------------------------------|-------------------------------|-------------|--------------|
|                                                             | P. Canes.                     | 1st ratoons | 2nd Ratoons. |
| Mulched. No S.A. ....                                       | 21.66                         | 15.87       | 7.23         |
| Mulched. 2 cwt. S.A. ....                                   | 21.08                         | 20.09       | 8.53         |
| Mulched. 4 cwt. S.A. ....                                   | 23.62                         | 16.39       | 7.39         |
| No mulch. No S.A. ....                                      | 14.42                         | 16.15       | 8.33         |
| No Mulch. 2 cwt. S.A. ....                                  | 15.50                         | 15.98       | 8.07         |
| No Mulch. 4 cwt. S.A. ....                                  | 16.37                         | 17.13       | 7.39         |
| Mean yield of No Mulch plots                                | 15.43                         | 17.50       | 7.72         |
| Mean Yield of Mulched plots ....                            | 22.12                         | 16.40       | 7.93         |

The immediate gain in yield from Trash mulching of 6.69 tons cane per acre was highly significant but the residual gains on first ratoons were small and do not appear to have persisted to the second ratoons.

In neither of the above experiments were manures applied to the ratoon crops.

*II. Trash Mulching with and without Sulphate of Ammonia and with and without a complete inorganic fertilizer.*

Estate—Winthorpes. Field No. 10  
 Soil Type—Fitches Clay.  $\text{CaCO}_3 = 46.35\%$ .  
 Variety—B.147 (B.4507).  
 Planted—18/10/35.  
 Mulched 8/1/36.  
 Reaped as Plant Canes 2/5/37.  
 Reaped as 1st ratoons 20/3/38.  
 Rainfall as 1st ratoons (10 $\frac{3}{4}$  months) — 25 ins.  
 Layout—One 6 x 6 Latin Square.  
 Plot area — 1/30 acre.

| Cultural and Manurial Treatment per acre as Plant Cane.                   | Yield—Tons per acre as P. Cane. | Manurial Treatment per acre as Ratoons.                   | Yield—Tons per acre as 1st Rat. | Totals. |
|---------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------|---------------------------------|---------|
| Trash Mulch. No Manure ....                                               | 34.31                           | No manure.                                                | 9.68                            | 43.99   |
| Trash Mulch. 3 cwt. S.A. ....                                             | 37.24                           | 2 cwt. S.A.                                               | 11.48                           | 48.72   |
| Trash Mulch. 3 cwt. S.A. 2 cwt. Super, 2 cwt $\text{K}_2\text{SO}_4$ .... | 42.28                           | 2 cwt. S.A., 2 cwt. Super, 2 cwt $\text{K}_2\text{SO}_4$  | 15.13                           | 57.41   |
| No Mulch. No Manure ....                                                  | 32.87                           | No Manure                                                 | 8.94                            | 41.81   |
| No Mulch. 3 cwt. S.A. ...                                                 | 33.42                           | 2 cwt. S.A.                                               | 11.33                           | 44.75   |
| No Mulch. 3 cwt. S.A., 2 cwt. Super, 2 cwt $\text{K}_2\text{SO}_4$ ....   | 36.07                           | 2 cwt. S.A., 2 cwt. Super, 2 cwt. $\text{K}_2\text{SO}_4$ | 12.94                           | 49.01   |

The immediate and residual gains in yield from trash mulching might be due to chance less than once in 100 times and once in 20 times respectively. In both cases the gain is greatest in the presence of the complete inorganic manure.

The gains in yield from manures also are greatest in the presence of the trash mulch.

D. Spraying with Iron Sulphate in the presence and absence of a complete inorganic fertilizer.

Estate—Betty's Hope. Field No. 28.  
 Soil Type—Fitches Clay. Highly calcareous.  
 Variety—B.H.10.12.  
 Planted—21/12/36.  
 Reaped—7/2/38.  
 Rainfall as Plant Canes—(13 $\frac{1}{2}$  months)—43 ins.  
 Layout—Three 4 x 4 Latin Squares with manured half plots.

| Treatments with $\text{FeSO}_4$       | Yield of canes—Tons per acre. |        |            |
|---------------------------------------|-------------------------------|--------|------------|
|                                       | No manure                     | N.P.K. | Main Plots |
| Nil ....                              | 28.39                         | 29.37  | 28.88      |
| One spraying                          | 28.52                         | 29.62  | 29.07      |
| Two sprayings                         | 28.88                         | 29.10  | 28.99      |
| Three sprayings                       | 30.57                         | 30.54  | 30.56      |
| Mean yield of No Manure and of N.P.K. |                               |        |            |
| Plots ....                            | 29.09                         | 29.66  |            |



Average differences in yield of the main plots exceeding 1.16 tons per acre and 1.57 tons per acre might be due to chance less than once in 20 times and once in 100 times respectively.

The increased yield resulting from the complete inorganic manure is very small and is not statistically significant.

E. Soaking of Setts in Relation to Variety.

Estate — Betty's Hope. Field No. 28.

Soil Type—Fitches Clay.  $\text{CaCo}_3$ .

Planted — 4/3/37.

Reaped — 9/2/38.

Layout — Four  $3 \times 3$  Latin Squares with varietal half plots.

| Nature of Soaking Solution  | Germination after<br>1st supplying. |          | Yield of Cane<br>Tons per acre. |          |
|-----------------------------|-------------------------------------|----------|---------------------------------|----------|
|                             | B.H.10.12                           | Ba.11569 | B.H.10.12                       | Ba.11569 |
| Nil.                        | 95%                                 | 33%      | 34.88                           | 18.49    |
| Lime Water (saturated) .... | 99%                                 | 94%      | 35.08                           | 37.39    |
| Ferrous Sulphate—0.5% ....  | 60%                                 | 72%      | 24.38                           | 33.06    |

The average effect of soaking treatment on yield might be due to chance less than once in 100 times. The interaction of soaking treatment with variety might be due to chance less than once in 100 times.

In this experiment cabbage plants were used throughout, but even with this material the effect of lime water treatment on the germination of Ba.11569 was very considerable.

### APPENDIX III.

#### LAND SETTLEMENT.

*Greencastle.* At the end of 1938, 101 plots—the total available were occupied.

There were no evictions during the year but there were three allottees who voluntarily transferred their plots and one transfer as a result of the death of the holder.

The general standard of cultivation has been fair but there are still many allottees who do not drain their plots adequately or keep their cultivation properly weeded. Late planting of the sugar cane crop is still far too common. Unfortunately it was not possible during 1938 to obtain the services of the gyrotiller. When it is possible to get lands ploughed for the allottees, this is done at such a time of the year as to encourage earlier planting.

The allottees continue to realise the value of manure, and the application of sulphate of ammonia to ratoons is now almost a universal practice. During 1938 loans to the value of £146. 9. 0. were made for the provision of fertilizers.

Loans totalling £143. 10. 0. were made for cultivation and reaping.

Exceptionally heavy rains at the end of June did considerable damage to drains throughout the settlement and £33. 0. 6. was spent on clearing them. In addition £2. 1. 6. was spent on internal roads and £1. 8. 9. on provision of plant-material.

The 1939 crop will be reaped from 253 acres (87 Plant Cane) and is estimated at 3,322 tons.

*Matthews.* At the end of December, 119 plots out of a total of 137 were occupied. The unoccupied plots were all on land of very little value.

There were no evictions during the year but there were two deaths and three voluntary transfers.

During the year £48. 15. 0. and £13. 2. 0. were advanced as loans for cultivation and reaping and for fertilizers respectively.

£2. 6. 0. was spent on opening trenches and £1. 14. 2. on internal roads.

The sum of £36. 16. 6. was spent through the Public Works Department on the construction of culverts to allow transport of canes from the internal roads to the reconstructed public road leading through Matthews and Jonas's which was so deeply trenched as to render this construction essential.

The 1939 crop will be reaped from 147 acres (53 acres Plant Cane) and is estimated at 1,497 tons.

*Jonas's.* At the end of December, 1938, 64 plots the total number available were occupied. There were no evictions during the year but there were three deaths and two voluntary transfers of land.

During the year £24. 15. 0. was loaned for purchase of fertilizers and £54. 2. 5. for cultivation and reaping.

£2. 5. 1. was spent on trenches.

The 1939 crop will be reaped from 85 acres (28 acres Plant Cane) and is estimated at 1,241 tons.

The following table shows the crops, the total proceeds and the allocation of the proceeds from the three Land Settlements above described and from the Folly for the period under review.

| Settle-<br>ment.      | Ton-<br>nage. | Total Value<br>of Canes. |       | Loans<br>Repaid. |       | Rents<br>Deducted. |       | Marketing<br>Charges* |       | Net Proceeds<br>Paid |       | Balance<br>Unpaid. |       |
|-----------------------|---------------|--------------------------|-------|------------------|-------|--------------------|-------|-----------------------|-------|----------------------|-------|--------------------|-------|
|                       |               | £                        | s. d. | £                | s. d. | £                  | s. d. | £                     | s. d. | £                    | s. d. | £                  | s. d. |
| Green-<br>castle .... | 2,949         | 2,064                    | 12 7  | 204              | 7 11  | 236                | 15 4  | 15                    | 7 5   | 1,607                | 19 6  | 0                  | 2 5   |
| Matthews              | 1,127         | 818                      | 18 1  | 85               | 6 5½  | 94                 | 6 6½  | 32                    | 17 6  | 606                  | 5 5   | 0                  | 2 2   |
| Jonas' ...            | 1,250         | 939                      | 1 7½  | 42               | 16 2  | 84                 | 1 2   | 36                    | 8 9½  | 775                  | 13 10 | 0                  | 1 5   |
| The Folly             | 64            | 44                       | 8 11  |                  |       | 13                 | 13 6  | 1                     | 16 7  | 28                   | 18 7  | 0                  | 0 3   |
| Total ....            | 5,390         | 3,867                    | 1 2½  | 332              | 10 6½ | 428                | 16 6½ | 86                    | 10 3½ | 3,018                | 17 4  | 0                  | 6 6   |

\* Greencastle. ½d. contribution to Sugar Cane Investigation Committee.  
¾d. per ton weighing.

Matthews.  
Jonas's  
Folly.  
Weighing 1d. Packing 4d. Supervision 2d.  
Weighing 1d. Packing 4d. Supervision 2d.  
Weighing ¾d. Packing 4d. Supervision 2d.

The total gross receipts amounted to £3,867. 1. 2½. The packing, weighing and supervision charges amounted to £86. 10. 3½ and unpaid balances to 6/6 so that the allottees received £3,780. 4. 5. either in cash, loans or in instalments of the purchase price of their plots.



# APPENDIX IV.

## METEOROLOGICAL

### RETURN OF RAINFALL OF THE FOLLOWING PLACES IN ANTIGUA FROM 1ST JANUARY TO 31ST DECEMBER, 1938.

| No. | Station.                          | January. | February | March | April. | May. | June. | July. | August | September | October. | November. | December. | Total. |
|-----|-----------------------------------|----------|----------|-------|--------|------|-------|-------|--------|-----------|----------|-----------|-----------|--------|
| 1   | Bendals Factory ..                | 2.45     | 0.88     | 1.21  | 0.89   | 1.97 | 11.71 | 3.99  | 8.64   | 1.90      | 10.04    | 12.67     | 3.64      | 59.99  |
| 2   | Creekside ... ..                  | 2.89     | 1.36     | 1.89  | 0.75   | 1.75 | 11.98 | 3.72  | 7.11   | 2.28      | 12.66    | 8.80      | 4.26      | 59.45  |
| 3   | Belvidere ... ..                  | 2.07     | 1.57     | 1.04  | 0.41   | 1.85 | 10.30 | 4.18  | 9.67   | 2.09      | 9.70     | 12.12     | 3.97      | 58.97  |
| 4   | Carlisle ... ..                   | 3.22     | 1.92     | 1.39  | 0.42   | 1.02 | 14.41 | 5.25  | 7.05   | 4.19      | 2.99     | 12.03     | 3.28      | 57.17  |
| 5   | Body Ponds ... ..                 | 2.19     | 1.42     | 1.53  | 0.78   | 1.96 | 11.58 | 4.11  | 8.62   | 2.35      | 9.21     | 9.52      | 3.78      | 57.05  |
| 6   | Wallings Hill ... ..              | 2.24     | 1.74     | 1.48  | 1.33   | 1.69 | 12.02 | 3.48  | 7.71   | 1.78      | 5.55     | 12.55     | 5.28      | 56.85  |
| 7   | Wallings Dam ... ..               | 2.17     | 1.66     | 1.51  | 1.30   | 1.67 | 12.32 | 3.37  | 7.61   | 1.66      | 5.72     | 12.28     | 5.17      | 56.44  |
| 8   | Yorkes ... ..                     | 2.29     | 0.40     | 2.09  | 0.68   | 1.95 | 11.10 | 3.95  | 8.54   | 1.22      | 9.05     | 9.71      | 3.30      | 54.28  |
| 9   | New Division ... ..               | 2.72     | 0.87     | 1.51  | 1.15   | 1.71 | 9.73  | 4.99  | 7.28   | 2.35      | 8.01     | 8.54      | 3.89      | 52.75  |
| 10  | Millars ... ..                    | 3.16     | 1.80     | 1.25  | 0.42   | 1.02 | 13.41 | 4.15  | 6.04   | 4.10      | 2.86     | 11.02     | 3.16      | 52.39  |
| 11  | Vernons ... ..                    | 1.80     | 1.14     | 0.86  | 0.74   | 0.93 | 12.37 | 2.83  | 8.09   | 3.27      | 6.37     | 11.03     | 2.61      | 52.04  |
| 12  | Botanic Station ... ..            | 2.96     | 1.24     | 1.58  | 0.65   | 1.44 | 12.86 | 4.58  | 5.66   | 4.40      | 4.38     | 8.44      | 2.59      | 50.78  |
| 13  | Antigua Sugar<br>Factory ... ..   | 3.31     | 0.71     | 1.33  | 0.54   | 0.50 | 12.87 | 3.97  | 6.71   | 5.27      | 3.15     | 8.94      | 3.33      | 50.63  |
| 14  | Pattersons ... ..                 | 1.91     | 1.05     | 2.59  | 0.69   | 1.14 | 10.79 | 4.49  | 8.34   | 3.24      | 3.36     | 8.65      | 3.04      | 49.29  |
| 15  | Bennett Bryson's<br>Office ... .. | 2.90     | 1.34     | 1.39  | 0.68   | 1.57 | 12.52 | 4.85  | 4.55   | 3.78      | 4.67     | 8.16      | 2.43      | 48.84  |
| 16  | Cedar Valley ... ..               | 2.58     | 1.27     | 0.91  | 0.49   | 0.98 | 14.02 | 4.35  | 5.18   | 3.05      | 2.66     | 9.67      | 3.23      | 48.39  |
| 17  | Blackmans ... ..                  | 3.01     | 0.69     | 1.48  | 0.72   | 0.68 | 11.32 | 3.16  | 5.62   | 6.33      | 2.57     | 9.65      | 3.01      | 48.24  |
| 18  | Donovans ... ..                   | 3.76     | 0.64     | 0.73  | 0.61   | 0.59 | 12.68 | 3.17  | 5.20   | 4.68      | 2.91     | 9.82      | 3.30      | 48.09  |
| 19  | Langfords ... ..                  | 2.73     | 1.17     | 1.12  | 0.56   | 0.93 | 14.57 | 4.30  | 4.99   | 3.11      | 1.81     | 9.82      | 2.76      | 47.87  |
| 20  | Bellevue ... ..                   | 1.34     | 0.83     | 1.23  | 0.47   | 0.91 | 10.33 | 2.62  | 8.24   | 1.77      | 6.15     | 10.26     | 3.37      | 47.52  |
| 21  | Sandersons ... ..                 | 0.55     | 0.54     | 1.47  | 0.84   | 1.15 | 10.81 | 2.86  | 8.92   | 2.97      | 4.28     | 9.37      | 3.10      | 46.86  |
| 22  | Ottos ... ..                      | 3.40     | 0.76     | 1.10  | 0.32   | 0.90 | 11.37 | 4.20  | 4.77   | 3.21      | 7.12     | 7.26      | 1.93      | 46.34  |
| 23  | Diamond ... ..                    | 1.17     | 0.34     | 1.48  | 0.71   | 1.18 | 12.45 | 2.51  | 9.13   | 2.10      | 3.61     | 8.80      | 2.62      | 46.10  |
| 24  | Delaps ... ..                     | 1.75     | 0.72     | 1.59  | 0.37   | 1.40 | 11.23 | 3.58  | 8.81   | 2.72      | 3.84     | 7.39      | 2.55      | 45.95  |
| 25  | Fitches Creek ... ..              | 3.64     | 1.48     | 1.06  | 0.67   | 0.53 | 12.47 | 3.01  | 4.37   | 3.78      | 2.47     | 9.06      | 2.70      | 45.24  |
| 26  | Weirs ... ..                      | 3.06     | 0.30     | 0.43  | 0.18   | 0.55 | 11.25 | 3.12  | 5.80   | 7.46      | 1.60     | 8.55      | 2.84      | 45.14  |
| 27  | Judges ... ..                     | 2.68     | 0.97     | 0.42  | 0.54   | 0.91 | 13.12 | 3.71  | 5.12   | 3.89      | 2.48     | 8.63      | 2.62      | 45.09  |
| 28  | Marble Hill ... ..                | 3.10     | 1.10     | 1.19  | 0.35   | 1.00 | 12.87 | 4.42  | 4.73   | 1.73      | 2.70     | 8.55      | 2.60      | 44.34  |
| 29  | Blakes ... ..                     | 1.83     | 0.95     | 1.70  | 0.48   | 1.13 | 10.99 | 3.38  | 7.60   | 3.13      | 3.38     | 6.91      | 2.04      | 43.52  |
| 30  | Paynters ... ..                   | 2.73     | 1.24     | 1.05  | 0.72   | 0.48 | 12.07 | 3.28  | 4.86   | 4.22      | 3.12     | 7.31      | 2.43      | 43.51  |
| 31  | North Sound ... ..                | 2.62     | 0.84     | 0.84  | 0.44   | 0.93 | 10.53 | 2.24  | 5.71   | 1.90      | 4.96     | 9.70      | 2.49      | 43.20  |
| 32  | The Cotton ... ..                 | 2.12     | 0.55     | 1.10  | 0.47   | 0.97 | 11.37 | 2.14  | 5.67   | 3.37      | 4.22     | 7.75      | 2.70      | 42.43  |
| 33  | Betty's Hope<br>Garden ... ..     | 1.38     | 0.36     | 0.84  | 0.44   | 1.52 | 11.55 | 2.00  | 8.29   | 2.48      | 3.33     | 7.48      | 2.64      | 42.31  |

**RETURN OF RAINFALL OF THE FOLLOWING PLACES IN ANTIGUA FROM 1ST  
JANUARY TO 31ST DECEMBER, 1938.**

| No. | Station                       | January | February | March | April | May  | June  | July. | August | September | October | November | December | Total. |
|-----|-------------------------------|---------|----------|-------|-------|------|-------|-------|--------|-----------|---------|----------|----------|--------|
| 34  | Parham N. Work                | 1.59    | 0.30     | 0.78  | 0.40  | 0.82 | 12.34 | 1.53  | 6.00   | 2.73      | 4.53    | 8.19     | 2.48     | 41.69  |
| 35  | Parham Lodge ...              | 2.42    | 1.61     | 1.38  | 0.26  | 0.69 | 11.18 | 2.41  | 4.28   | 3.99      | 2.70    | 7.98     | 2.57     | 41.47  |
| 36  | Gaynors ...                   | 1.44    | 0.46     | 1.10  | 0.60  | 1.31 | 14.34 | 2.18  | 5.97   | 1.95      | 2.75    | 7.71     | 1.51     | 41.32  |
| 37  | Parham Hill ...               | 2.05    | 0.43     | 0.68  | 0.47  | 0.60 | 11.41 | 1.80  | 4.82   | 2.80      | 4.99    | 8.84     | 2.38     | 41.27  |
| 38  | Yeptons ...                   | 2.04    | 1.34     | 0.42  | 0.36  | 1.56 | 11.50 | 3.51  | 3.97   | 2.70      | 4.92    | 7.02     | 1.87     | 41.21  |
| 39  | Betty's Hope ...              | 1.09    | 0.30     | 0.96  | 0.33  | 0.98 | 11.03 | 2.44  | 7.51   | 3.81      | 3.08    | 7.11     | 2.53     | 41.17  |
| 40  | Cassada Garden ...            | 2.40    | 1.21     | 1.26  | 0.63  | 0.83 | 10.05 | 3.91  | 2.79   | 2.31      | 2.03    | 10.40    | 2.87     | 40.69  |
| 41  | Pares & Cochranes             | 1.15    | 0.28     | 1.15  | 0.46  | 0.75 | 12.09 | 1.98  | 6.92   | 2.85      | 2.93    | 7.46     | 2.30     | 40.32  |
| 42  | Long Lane ...                 | 0.73    | 0.94     | 2.32  | 0.18  | 1.17 | 10.85 | 2.17  | 8.19   | 2.27      | 2.50    | 5.95     | 2.52     | 39.79  |
| 43  | Gilberts ...                  | 1.42    | 0.37     | 1.12  | 0.32  | 0.88 | 11.45 | 1.78  | 5.98   | 3.97      | 2.60    | 7.53     | 2.15     | 39.57  |
| 44  | Weatherills ...               | 2.38    | 0.00     | 1.40  | 0.29  | 0.75 | 13.22 | 2.93  | 3.18   | 3.00      | 1.12    | 8.23     | 3.00     | 39.50  |
| 45  | Burkes ...                    | 1.74    | 0.07     | 1.24  | 0.13  | 1.27 | 9.63  | 2.65  | 7.34   | 2.43      | 3.90    | 6.21     | 2.63     | 39.24  |
| 46  | Comfort Hall ...              | 1.32    | 0.00     | 1.23  | 0.22  | 1.06 | 10.63 | 1.85  | 6.53   | 5.05      | 2.14    | 7.06     | 1.45     | 38.54  |
| 47  | Duers ...                     | 1.32    | 0.31     | 0.64  | 0.24  | 1.14 | 10.00 | 2.52  | 7.70   | 1.95      | 3.18    | 6.90     | 2.32     | 38.22  |
| 48  | Collins ...                   | 1.34    | 0.40     | 0.71  | 0.46  | 0.65 | 11.79 | 2.13  | 6.58   | 3.25      | 2.04    | 6.59     | 2.17     | 38.11  |
| 49  | Thibous ...                   | 1.15    | 0.71     | 0.59  | 0.66  | 0.87 | 12.11 | 2.83  | 4.65   | 3.21      | 2.08    | 7.26     | 1.91     | 38.03  |
| 50  | Cochranes and<br>Thomases ... | 1.87    | 0.35     | 1.40  | 0.30  | 0.55 | 9.55  | 2.92  | 6.60   | 2.91      | 2.48    | 7.19     | 1.67     | 37.79  |
| 51  | Ffryes ...                    | 1.12    | 0.43     | 1.69  | 0.21  | 1.23 | 10.63 | 2.24  | 9.60   | 1.95      | 1.63    | 5.68     | 1.10     | 37.51  |
| 52  | Morris Looby's ...            | 1.61    | 0.85     | 1.40  | 0.50  | 0.85 | 6.66  | 2.95  | 5.93   | 3.51      | 3.30    | 7.56     | 1.62     | 36.74  |
| 53  | Willis Freemans ...           | 0.72    | 0.58     | 1.12  | 0.21  | 1.12 | 10.53 | 2.69  | 5.90   | 1.63      | 3.10    | 6.97     | 1.86     | 36.43  |
| 54  | Lyons ...                     | 1.45    | 0.45     | 1.38  | 0.38  | 0.88 | 11.17 | 2.30  | 7.51   | 1.56      | 2.07    | 5.30     | 1.45     | 35.90  |
| 55  | Mercers Creek ...             | 1.36    | 0.28     | 0.73  | 0.21  | 0.53 | 11.21 | 1.11  | 4.79   | 3.62      | 2.14    | 7.12     | 1.90     | 35.00  |
| 56  | Montpelier ...                | 1.34    | 0.50     | 1.22  | 0.34  | 0.82 | 11.53 | 2.10  | 7.36   | 1.74      | 1.82    | 4.80     | 1.33     | 34.90  |
| 57  | High Point ...                | 1.68    | 0.52     | 0.60  | 0.28  | 0.89 | 10.32 | 2.40  | 3.20   | 1.87      | 2.14    | 6.21     | 1.87     | 31.98  |
| 58  | Winthorpes ...                | 1.80    | 0.42     | 0.64  | 0.08  | 0.28 | 11.71 | 2.32  | 2.97   | 1.33      | 1.53    | 5.99     | 2.90     | 31.97  |
|     | Barbuda ...                   | 2.36    | 1.05     | 0.24  | 0.85  | 1.24 | 6.92  | 1.03  | 5.50   | 1.88      | 8.59    | 4.11     | 1.69     | 35.46  |

# AVERAGE RAINFALL 1874-1938.

| In   | the | average | rainfall | on | 41 | stations | was | ins.  | AVERAGE MONTHLY<br>RAINFALL, 1938. |            |
|------|-----|---------|----------|----|----|----------|-----|-------|------------------------------------|------------|
| 1874 |     |         |          |    | 41 |          |     | 31.16 |                                    |            |
| 1875 |     |         |          |    | 40 |          |     | 28.78 |                                    |            |
| 1876 |     |         |          |    | 36 |          |     | 41.98 |                                    | inches.    |
| 1877 |     |         |          |    | 38 |          |     | 49.05 | January                            | .... 2.07  |
| 1878 |     |         |          |    | 53 |          |     | 47.11 |                                    |            |
| 1879 |     |         |          |    | 52 |          |     | 61.54 | February                           | .... 0.81  |
| 1880 |     |         |          |    | 46 |          |     | 49.68 |                                    |            |
| 1881 |     |         |          |    | 44 |          |     | 53.75 | March                              | .... 1.20  |
| 1882 |     |         |          |    | 45 |          |     | 33.04 |                                    |            |
| 1883 |     |         |          |    | 56 |          |     | 55.51 | April                              | .... 0.51  |
| 1884 |     |         |          |    | 56 |          |     | 43.98 |                                    |            |
| 1885 |     |         |          |    | 53 |          |     | 43.39 | May                                | .... 1.06  |
| 1886 |     |         |          |    | 55 |          |     | 47.78 |                                    |            |
| 1887 |     |         |          |    | 50 |          |     | 43.68 | June                               | .... 11.58 |
| 1888 |     |         |          |    | 47 |          |     | 44.23 |                                    |            |
| 1889 |     |         |          |    | 50 |          |     | 73.59 | July                               | .... 3.10  |
| 1890 |     |         |          |    | 45 |          |     | 33.00 |                                    |            |
| 1891 |     |         |          |    | 45 |          |     | 50.01 | August                             | .... 6.39  |
| 1892 |     |         |          |    | 53 |          |     | 38.43 |                                    |            |
| 1893 |     |         |          |    | 54 |          |     | 38.69 | September                          | .... 3.00  |
| 1894 |     |         |          |    | 68 |          |     | 38.85 |                                    |            |
| 1895 |     |         |          |    | 69 |          |     | 52.91 | October                            | .... 3.95  |
| 1896 |     |         |          |    | 56 |          |     | 59.85 |                                    |            |
| 1897 |     |         |          |    | 54 |          |     | 39.67 | November                           | .... 8.41  |
| 1898 |     |         |          |    | 66 |          |     | 48.85 |                                    |            |
| 1899 |     |         |          |    | 63 |          |     | 47.50 | December                           | .... 2.67  |
| 1900 |     |         |          |    | 64 |          |     | 36.95 |                                    |            |
| 1901 |     |         |          |    | 65 |          |     | 57.61 |                                    | 44.75      |
| 1902 |     |         |          |    | 71 |          |     | 58.80 |                                    |            |
| 1903 |     |         |          |    | 68 |          |     | 43.68 |                                    |            |
| 1904 |     |         |          |    | 70 |          |     | 37.01 |                                    |            |
| 1905 |     |         |          |    | 68 |          |     | 31.40 |                                    |            |
| 1906 |     |         |          |    | 66 |          |     | 53.93 |                                    |            |
| 1907 |     |         |          |    | 70 |          |     | 43.45 |                                    |            |
| 1908 |     |         |          |    | 72 |          |     | 43.79 |                                    |            |
| 1909 |     |         |          |    | 70 |          |     | 45.15 |                                    |            |
| 1910 |     |         |          |    | 70 |          |     | 34.77 |                                    |            |
| 1911 |     |         |          |    | 72 |          |     | 36.47 |                                    |            |
| 1912 |     |         |          |    | 72 |          |     | 32.20 |                                    |            |
| 1913 |     |         |          |    | 73 |          |     | 42.76 |                                    |            |
| 1914 |     |         |          |    | 72 |          |     | 36.86 |                                    |            |
| 1915 |     |         |          |    | 75 |          |     | 56.14 |                                    |            |
| 1916 |     |         |          |    | 74 |          |     | 58.23 |                                    |            |
| 1917 |     |         |          |    | 70 |          |     | 36.62 |                                    |            |
| 1918 |     |         |          |    | 70 |          |     | 37.87 |                                    |            |
| 1919 |     |         |          |    | 70 |          |     | 49.56 |                                    |            |
| 1920 |     |         |          |    | 70 |          |     | 30.09 |                                    |            |
| 1921 |     |         |          |    | 74 |          |     | 30.32 |                                    |            |
| 1922 |     |         |          |    | 70 |          |     | 35.14 |                                    |            |
| 1923 |     |         |          |    | 68 |          |     | 32.41 |                                    |            |
| 1924 |     |         |          |    | 67 |          |     | 41.57 |                                    |            |
| 1925 |     |         |          |    | 68 |          |     | 30.75 |                                    |            |
| 1926 |     |         |          |    | 70 |          |     | 50.20 |                                    |            |
| 1927 |     |         |          |    | 67 |          |     | 45.84 |                                    |            |
| 1928 |     |         |          |    | 63 |          |     | 33.24 |                                    |            |
| 1929 |     |         |          |    | 66 |          |     | 40.78 |                                    |            |
| 1930 |     |         |          |    | 59 |          |     | 25.51 |                                    |            |
| 1931 |     |         |          |    | 63 |          |     | 48.62 |                                    |            |
| 1932 |     |         |          |    | 63 |          |     | 58.47 |                                    |            |
| 1933 |     |         |          |    | 59 |          |     | 41.50 |                                    |            |
| 1934 |     |         |          |    | 60 |          |     | 41.86 |                                    |            |
| 1935 |     |         |          |    | 57 |          |     | 38.31 |                                    |            |
| 1936 |     |         |          |    | 60 |          |     | 59.99 |                                    |            |
| 1937 |     |         |          |    | 59 |          |     | 47.28 |                                    |            |
| 1938 |     |         |          |    | 58 |          |     | 44.75 |                                    |            |

The average rainfall for 65 years is 43.70 inches, so that the rainfall for the year 1938 is 1.05 inches above the average.



# METEOROLOGICAL SUMMARY, 1938.

Kept at the Botanic Station, Antigua.

| MONTH              | THERMOMETER |        |        |        |                   |        | BAROMETER READING |         | RAINFALL AT BOTANIC STATION | BAROMETER CORRECTED |        | THERMOMETER  |             |     |    |
|--------------------|-------------|--------|--------|--------|-------------------|--------|-------------------|---------|-----------------------------|---------------------|--------|--------------|-------------|-----|----|
|                    | DRY         |        | WET    |        | RELATIVE HUMIDITY |        | MAXIMUM           | MINIMUM |                             | HIGHEST             | LOWEST | HIGHEST MAX. | LOWEST MIN. |     |    |
|                    |             |        |        |        |                   |        |                   |         |                             |                     |        |              |             |     |    |
|                    |             |        |        |        |                   |        |                   |         |                             |                     |        |              |             |     |    |
| 9 A.M.             | 3 P.M.      | 9 A.M. | 3 P.M. | 9 A.M. | 3 P.M.            | 9 A.M. | 3 P.M.            | 30.088  | 30.017                      | 2.96                | 30.161 | 29.953       | 83          | 68  |    |
| January            | 77.5        | 77.4   | 70.8   | 71.3   | 70.0              | 73.0   | 81.7              | 70.5    | 30.088                      | 30.017              | 2.96   | 30.161       | 29.953      | 83  | 68 |
| February           | 77.2        | 77.2   | 68.7   | 68.2   | 65.5              | 61.5   | 80.6              | 69.1    | 30.121                      | 30.051              | 1.24   | 30.187       | 30.000      | 82  | 65 |
| March              | 78.6        | 79.2   | 70.5   | 70.2   | 66.0              | 62.5   | ...               | 70.6    | 30.103                      | 30.024              | 1.58   | 30.167       | 29.956      | ... | 67 |
| April              | 79.3        | 79.2   | 70.8   | 70.7   | 66.0              | 66.0   | ...               | 70.9    | 30.071                      | 29.998              | 0.65   | 30.144       | 29.926      | ... | 67 |
| May                | 82.3        | 83.3   | 74.3   | 74.8   | 67.0              | 64.0   | ...               | 74.0    | 30.050                      | 29.991              | 1.44   | 30.109       | 29.887      | ... | 70 |
| June               | 82.1        | 82.7   | 75.7   | 75.6   | 75.0              | 71.5   | ...               | 74.0    | 30.101                      | 30.059              | 12.86  | 30.144       | 30.008      | ... | 69 |
| July               | 82.5        | 82.4   | 76.2   | 76.2   | 71.5              | 75.0   | ...               | 75.8    | 29.999                      | 29.952              | 4.58   | 30.127       | 29.983      | ... | 72 |
| August             | 82.3        | 83.2   | 77.4   | 76.9   | 79.0              | 75.5   | ...               | 75.5    | 30.006                      | 29.946              | 5.66   | 30.098       | 29.905      | ... | 72 |
| September          | 83.2        | 83.9   | 77.5   | 78.1   | 79.0              | 76.0   | ...               | 74.4    | 30.006                      | 29.946              | 4.40   | 30.063       | 29.863      | ... | 70 |
| October            | 82.7        | 82.6   | 77.4   | 77.6   | 75.5              | 79.0   | ...               | 74.2    | 29.963                      | 29.892              | 4.38   | 30.060       | 29.790      | ... | 71 |
| November           | 79.7        | 79.7   | 75.3   | 75.4   | 79.0              | 79.0   | 81.8              | 73.8    | 29.959                      | 29.883              | 8.44   | 30.039       | 29.799      | 85  | 70 |
| December           | 79.3        | 79.6   | 74.5   | 74.8   | 82.5              | 79.0   | 81.7              | 72.8    | 29.977                      | 29.895              | 2.59   | 30.147       | 29.758      | 85  | 70 |
| Means for the Year | 80.6        | 80.9   | 74.1   | 74.2   | 73.0              | 71.8   | ...               | 73.0    | 30.043                      | 29.978              | 50.78  |              |             |     |    |

The Maximum Thermometer was not in working order during March—October.  
 Lowest Minimum Temperature = 65° on 17th and 18th February.  
 Highest Barometer (corr) = 30.187 on 14th February.  
 Lowest Barometer (corr) = 29.758 on 2nd December.  
 Greatest Rainfall in 24 hours = 7.02 ins. on 28th June.









